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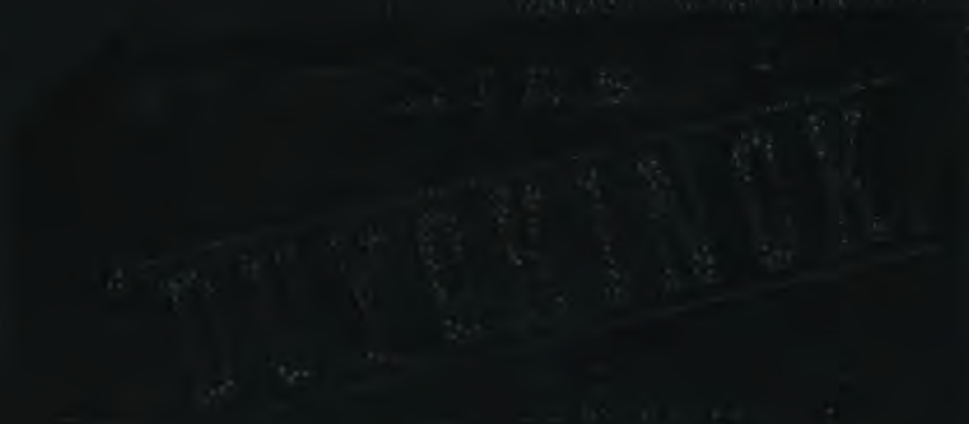

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INDEX.

	Page
Adzes	146
Axes	146
Angle Valves	43
Ayres Valves	46
Anvils	120
Air Cocks	47
Air Gauges	5
Air Valves	41
Arbor for Chucks	104
Auxiliary Jaw	83
Augers	100
Augers, Gas Fitters'	86
Augers, Sand and Clay	29
Angular Bit Stock	96
Angular Ratchet Drill	95
Adjustable Ratchet Drill	95
Baggage Trucks	150
Balances, Spring	12
Balance Valve	41
Braces, Bit	96
Baskets, Suction	40
Back Pressure Valve	41
Baxter Wrenches	94
Breast Drills	96
Bells	32
Bell Cranks	33
Bell Pulls	33
Bevels	169
Bench Screws	93
Bending Cones	119
Belting	158
Belt Coupling	160
Belt Hooks	160
Belt Punches	160
Belt Rivets	160
Belt Studs	160
Belt Tighteners	160
Bellows, Blacksmiths'	127
Bellows, Hurricane	127
Bellows, Molders	129
Borax	174
Blowers, Clark	128
Blowers, Eclipse	127
Blowers, Keystone	126
Blowers, MacKenzie	128
Blowers, Root	126
Blowers, Sturtevant	189
Boxes, Coal and Wood	119
Blow Pipe	86
Boring Machines	99, 100
Brooms	130
Blocks, Pickering's	153
Blocks, Self-Sustaining	153
Blocks, Wood	152
Blocks, Wrought Iron	151
Bolt Cutter, Grant's	113
Bolt Cutter, Hand	109
Bolt Cutter, Schlenker's	110, 111
Bolt Cutter, Lightning	112
Bibbs, Water	39
Bibbs, Steam	39
Bits	100
Bit Stocks	96
Bit Stock Drills	101
Brine Pots	10
Bridge Builders' Wrench	94
Buckets	35
Butterfly Valve	41
Buttress	120
Brushes	130
Baggage Checks	187
Blast Gates	189
Basket Rack	185
Belts, Polishing	177
Bell Cord Fittings	185
Bits, Patent Machine	192
Blowers, Sturtevant	189
Bolts, Carriage	181
Bolts, Elevator	180
Bolts, Ends	180
Bolts, Hanger	180
Bolts, Machine	180
Bolts, Plow	180
Bolts, Skein	182
Bolts, Sink	181
Bolts, Stove	181
Bolts, Track	180
Bolts, Tire	181
Burners, Donohue's Patent	192
Clamps	108, 109
Cam Valve	42
Chapman Valve	45
Claw Jacks	145
Cab Lamps	74
Cars, Coal	150
Cars, Hand	149
Car Washers	132
Carts	148
Caps, Iron Driving	29
Chandelier Hooks	54
Chasers, Pipe	85
Chasers, Screw	170
Cans, Oil	70
Cans, Locomotive Oil	70
Cans, Tallow	70
Cast Iron Fittings	57
Chain	154
Chain Links	154
Calipers	164, 165
Caliper Rule	166
Caliper Square	166
Calipers, Vernier	166
Champion Ratchet Drill	95
Check Valves	40
Centring Attachment	103
Centring Machine	103
Chimes, Whistle	32
Chisels, Pipe	85
Coal Cars	150
Coal and Water Boxes	119
Crowbars	145
Cordage	159
Compass Dividers	164, 165
Core Box	129
Crow, Drilling	87
Compounds	158
Copper Bolt Hatchet	86
Coe Drill	97
Coe Wrench	94
Coil Heater	58
Coil Stands	58
Collins Wrench	94
Couplings, Plain	54
Couplings, Hose	36
Cross Valve	43
Combination Columns	8
Clocks, Marine	7
Cocks, Air	47
Cocks, Cylinder	47
Cocks, Gas	48
Cocks, Gauge, Ball Lever	49
Cocks, Gauge, Cook's	49
Cocks, Gauge, Hard Rubber	49
Cocks, Gauge, Improved Mississippi	49
Cocks, Gauge, Jenkins'	49
Cocks, Gauge, Mississippi	50
Cocks, Gauge, Register	49
Cocks, Gauge, Ross'	49
Cocks, Gauge, Self-Cleaning	48
Cocks, Gauge, Steam Metal	50
Cocks, Gauge, Smith's	49
Cocks, Gauge, Schofield's	49
Cocks, Gauge, Stuffing Box	48
Cocks, Gauge, Wooden Handle	48
Cocks for Steam Gauges	4
Cocks, Steam	39
Cock Wrenches	54
Cocks, Iron	48
Cutter, Iron	136, 137
Cushman Chucks	107

INDEX.

	Page
Cups, Compound	64
Chucks, Drill	104
Chucks, Lathe	105–107
Crucibles	129
Cutting Pliers	163
Cutting Pliers, Plumbers'	86
Cups, Oil, Plain	61
Cylinder Cocks	47
Cylinder for Pump	29
Car Fittings	185, 186
Crank Pin Machine	189
Copper	190
Damper Regulator	13
Detectors, Low Water	11
Detectors, Watchmen	11
Diamond Tool	175, 192
Dies, Blacksmith	115
Die Dog	108
Die Holder	85
Drills, Blasting	148
Differential Pulley Blocks	153
Drill Chucks	104
Drill, Hand	97
Drill, Twist	101
Drill Cutter	133
Drill Stock	87
Drill, Pipe	85
Drill, Track Ratchet	142
Dividers	164
Dogs	108, 109, 192
Drop Press	136
Dynamometer	9
Expansion Bits	100
Expansion Joints	54
Expansion Mandrels	103
Expansion Plates	58
Expansion Reamers	103
Expander, Tube	133
Emery	174
Emery Cloth	174
Emery Paper	174
Emery Wheels	175
Emery Wheel Dresser	175
Extension Braces	96
Engine Register	7
Empire Forge	122
Extinguisher, Fire	35
Eddy Valve	44
Emery Grinders	176, 177
Flanges	53
Flange Unions	53
Farriers' Tools	120
Flasks	127
Feather Dusters	132
Felt, Hair	159
Ferrules, Wrought Iron	54
Files	173
Files, Recutting	174
Files, Stubs'	174
File Cards	174
Flint Paper	174
Fittings, Brass Pipe	54
Fittings, Cast Iron	57
Fittings, Malleable Iron	55
Fittings, Wrought Iron	52
Fog Signals	149
Forge, Blast	127
Forge, Empire	122
Forge, Keystone	125
Forge, Patterson's	123
Forge, Root's	124
Forge, Queen's	125
Forged Wrenches	94
Furnaces	86
Furnace, Brass Founders'	127
Flue Brushes	131
Fly Presses	136
Fire Extinguisher	35
Foot Valves	40
Gas Heater	170
Gauge Glasses	1
Gauges, Air	5
Gauges, Centre	167
Gauges, Gas House	5
Gauges, Gas Fitters'	5
Gauges, Hydraulic	4
Gauges, Drill	167
Gauges, Marking	167
Gauges, Steam, American	3
Gauges, Steam, Ashcroft	2
Gauges, Steam, Buffalo	3
Gauges, Steam, Bourdon	3
Gauges, Steam, Eastman	4
Gauges, Steam, Lane's Improved	3
Gauges, Steam, Mercurial Syphon	5
Gauges, Steam, Recording	2
Gauges, Steam, Schaeffer & Budenberg	4
Gauges, Steam, Self-testing	2
Gauges, Steam, Test	3
Gauges, Steam, Utica	3
Gauges, Steam, Cocks for	4
Gauge Screw Plate	167
Gauge, Steel	167
Gauge, Wire	167
Gauge Cocks, see Cocks.	
Gas Cocks	48
Gauge, Track	149
Gauge, Water	1
Gauge, Syphon	4
Gallagher's Ratchet Drill	95
Garside's Ratchet Drill	95
Grindstones	174
Gongs	33
Gongs, Steam	32
Gong Springs	33
Globes, Lantern	74
Globe Valves	43
Governors, Huntoon	15
Governors, Judson	15, 192
Governors, Shive	16
Governors, Pickering	16
Governors, Waters	16
Governor Valves	41
Ground Glass	174
Gutta Percha	35
Gum Shellac	174
Grindstone Frames	178
Governors, Pickering	192
Hand Cars	149
Hack Saws	163
Hatchets	146
Hammers, Babbitt	162
Hammers, Blacksmiths'	120
Hammers, Copper	162
Hammers, Drilling	148
Hammers, Engineers'	162
Hammers, Farriers'	120
Hammers, Machinists'	162
Hammers, Nail	162
Hammers, Napping	120
Hammers, Paving	148
Hammers, Planishing	162
Hammers, Riveting	162
Hammers, Striking	148
Hammers, Stone	148
Hammers, Turning	120
Handles	170
Hand Drill	97
Head Lights	74
Heater Coils	58
Heaters, Feed Water	59
Hose	34
Hose Bands	36
Hose Caps	37
Hose Cart	35
Hose Cocks	37
Hose Couplings	36
Hose Dressing	35
Hose Nipple	37
Hose Nozzles	37
Hose Pipe	36
Hose Spanner	36
Hose Valve	37
Hooks, Chandelier	54
Hooks, Pipe	54
Hook Plates	58
Horizontal Drill	97
Horton Chuck	105
Hoisting Machine	181
Hydraulic Gauges	4
Hydraulic Jacks	143
Hydraulic Ram	30
Hydrant	54
Hoppers and Urinals	185
Injectors, Eclipse	21
Injectors, Friedmann	18
Injectors, Giffard	17
Injectors, Mack	19
Injectors, Rue	20
Indicator, Hydraulic	4
Indicator, Revolution	7
Indicator, Richards	9
Indicator, Speed	7
Ingersoll Ratchet Drill	95
Instruments	8
Iron	190
Jack Screws	144
Jack, Ratchet	144
Jack, Ball's	144
Jack, Leffel's	144
Jack, Hydraulic	143
Jenkins' Valve	43
Judson's Chuck	105
Judson Governors	15, 192
Johnson's Chuck	107
Key Wrench	94
Keys and Cotters	161
Knives, Machine	171
Knives, Chipping	86
Lamps, Car	73, 77
Lamps, Gas Fitters'	86
Lamps, Hand	72

	Page
Lamps, Miners'	72
Lanterns	73
Ladles	86
Lacing, Belt	158
Lead, Dry Red	174
Levels	171
Letters, Pattern	129
Letters, Steel	171
LeCount's Goods	108
Lindsay Wrench	94
Lime Extractor	59
Lock Safety Valves	42
Lowell Ratchet Drill	95
Lubricators, Broughton	66
Lubricators, Common	65
Lubricators, Excelsior	67
Lubricators, Gee's	66
Lubricators, Locomotive	65
Lubricators, N. & D	62
Lubricators, Open Top	66
Lubricators, Star	65
Lubricators, Siebert's	67
Lubricators, Storer's	66
Ludlow Valve	45
Lag Screws	182
Milling Wheels	170
Machinists' Fine Tools	163–172
Nail Sets	162
Nippers	163, 164
Nipple, Hose	37
Nipples, Soldering	54
Nut Taps	116
Nuts	184
Nuts, Malleable	183
Oilers, Broughton's	71
Oilers, Bonnell's	71
Oilers, Common	71
Oilers, Holland's	63
Oilers, Hodge's	67
Oilers, Malleable	71
Oilers, Machine	70, 71
Oilers, Prior's	71
Oilers, Scripture's	71
Oil Cans, Tin	70
Oil Cans, Thompson	64
Oil Cabinets	69
Oil Tanks	69
Oil Cups	61
Oil Cups, Broughton's	67, 68
Oil Cups, Eagle	66
Oil Cups, Gee's	64
Oil Cups, Star	68
Oil Feeders	70
Oil Font	72
Oil Testing Machine	11
Oil Stones	174
Oil Pumps	69
Packing	159
Packing Hooks	159
Packer's Ratchet Drills	95
Plates, Ring	58
Plates, Hook	58
Plates, Expansion	58
Pails	35
Peet Valve	46
Press, Drop	136
Press, Fly	136
Press, Hydraulic	139
Press, Power	138
Press, Screw	136
Pressure Regulators	14
Pipe	51
Pipe Bushings	85
Pipe Clamps	88
Pipe Cutters	81
Pipe Cutting Machines	79, 80
Pipe Fittings, Brass	54
Pipe Fittings, Iron	52
Pipe Hooks	54
Pipe Leak Stopper	54
Pipe Straps	54
Pipe Stands	58
Pipe Stocks and Dies	84
Pipe Taps	85
Pipe Tongs	83
Pipe Vises	88
Pipe Wrenches	82
Picks	146
Pliers	163
Pincers, Blacksmiths'	118
Pickering's Blocks	153
Point, Iron Filter	29
Portable Drilling Machine	99
Puddling Bar	148
Punch, Duplex	135
Punch, Hydraulic	133
Punch, Hydraulic Track	142
Punch, Double Lever	135
Punch, Power	141
Punch, Screw	133
Plumbers' Tools	86
Plumbago	174
Plumb Bobs	169
Pulleys, Governor	15
Punch and Shears, Taft's	140
Pumps, Air	30
Pumps, Boiler Feed	27
Pumps, Centrifugal	26
Pumps, Drip	30
Pumps, Cistern	29
Pumps, Lift and Force	28
Pumps, Plumbers' Force	30
Pumps, Pendulum Force	28
Pumps, Double Acting Force	28
Pumps, Rotary Force	26
Pumps, Proving	30
Pumps, Syphon	25
Pumps, Windmill Force	28
Pumps, Pressure Test	27
Pumps, Steam Gauge Test	6
Pumps, Blake's Steam	23
Pumps, Bucket Plunger Steam	27
Pumps, Cameron's Steam	23
Pumps, Guild & Garrison's Steam	24
Pumps, Knowles' Steam	22
Pumps, Aquometer Steam	25
Pumps, Niagara Steam	24
Pumps, Pneumatic Test	30
Pumps, Hydraulic	139
Pump Valves	40
Pyrometer	10
Padlocks	188
Pipe, Spiral, Locked, and Riveted	192
Pumps, Blake's Steam	192
Pumps, Knowles' Steam	192
Plugs, Patent Basin	191
Plugs, Fusible	188
Punches, Conductors'	187
Ratchet Brace	96
Register, Engine	7
Register Valve	41
Riddles, Molders'	129
Ring Plates	58
Rough Stops	37
Rottenstone	174
Rubber Valves	35
Rule, Flexible	169
Rammers	148
Ram, Hydraulic	30
Ratchet Drills	95
Ratchet Jacks	144
Ratchet Wrench	94
Rail Tongs	146
Reamers	102, 133
Reamers, Expanding	103
Reamers, Goddard's Patent	192
Reamers, Pipe	85
Revolving Rule	7
Revolution Indicator	7
Regulators, Damper	13
Regulators, Pressure	14
Reels, Wire	157
Rivets	183
Rivet Sets	133, 162
Richards Indicator	9
Rolls, Boiler	134
Rules, Steel	166
Rubber Cement	35
Russell's Patent Valves	43
Star Paper	174
Shackles, Patent	154
Safety Valve	41, 42
Salter's Balances	12
Swage Block	119
Scrapers, Flue	131
Scrapers, Road	148
Salinometers	10
Straightener, Rail	145
Strainers, Pump	40
Straps, Pipe	54
Scaling Picks	171
Spark Cloth	156
Steam Traps	60
Steam Gauges	4
Steam Cocks	39
Steam Stops	39
Steam Pumps, see Pumps.	
Shears, Hand	163
Shears and Punches	137
Screens, Sand and Coal	148
Speed Indicators	7
Spencer Brushes	132
Screw Drivers	171
Steel Rules	166
Street Lamps	77
Sledge, Coal	149
Sledge, Smiths'	120
Switch Stands	149
Switch, Portable	149
Snips	163
Swing Joints	39
Spring Keys	161
Sprinklers	37
Springs, Gong	33
Shovels, Molders'	129
Shovels	147
Scoops	147

INDEX.

	Page
Stops, Steam	39
Stops, Rough	37
Stop Valves	41
Stove, Brass Founders'	127
Stocks and Dies, Blacksmiths'	117
Stocks and Dies, Grant's	113
Stocks and Dies, Morse Twist	115
Stocks and Dies, Prentice	115
Stocks and Dies, Reece's	114
Stocks and Dies, Lightning	114
Stocks and Dies, for Pipe	84
Soldering Copper	86
Squares	168
Squares, Try	168
Stump Pullers	149
Suction Baskets	40
Syphons for Gauges	4
Shaper, Hand or Power	190
Seals, Metallic	188
Steel	190
Spelter	190
Screws, Cap	179
Screws, Set	179
Screws, Lag	182
Screws, Machine	183
Studs	179
Tank Valve	31
Track Jack	144
Track Chisels	146
Track Drills	142
Track Gauge	149
Track Brooms	132
Tackle Blocks	151, 152
Traps, Steam	60
Trammel Points	169
Taps, Machinists'	115
Taps for Machine Screws	116
Taps, Blacksmiths'	115
Taps, Nut	116
Taps, Pipe	85
Tap Borer	86
Tapping Machines	87
Tape Measure	172
Test Pumps	6
Thermometers	10
Timber Jacks	145
Twist Drills	101
Tire Plates	119
Tire Bender	119
Tire Upsetter	119
Tools, Machinists'	89
Tools, Blacksmiths'	118
Tools, Molders'	129
Tools, Pipe	78
Tools, Plumbers'	86
Tools, Boiler Makers'	133
Tools, Machinists' Fine	163
Tool Bag	86
Tool Holder	170
Tongs, Blacksmiths'	118
Tongs, Rail	146
Throttle Valve	41
Torch, Locomotive	72
Torch, Plumbers'	86
Tuyeres	121
Tube Brushes	132
Tube Expanders	133
Tube Cutters	133
Tube Scrapers	131
Tubing	51
Tubs, Coal	151
Trucks	150
Tin	190
Turnbuckles	182
Universal Drill	97, 99
Unions, Brass	54
Unions, Flange	53
Unions, Soldering	54
Valves, Angle	43
Valves, Ayres	46
Valves, Air	41
Valves, Balance	41
Valves, Back Pressure	41
Valves, Ball	35
Valves, Butterfly	41
Valves, Cam	42
Valves, Chapman	45
Valves, Check	40
Valves, Cross	43
Valves, Eddy	44
Valves, Foot	40
Valves, Globe	43
Valves, Governor	41
Valves, Hose	37
Valves, Jenkins'	43
Valves, Ludlow's	45
Valves, Manifold	58
Valves, Newport	46
Valves, Peet	46
Valves, Pump	40
Valves, Register	41
Valves, Russell	43
Valves, Stop	41
Valves, Test	56
Valves, Throttle	41
Valves, Tank	31
Valves, Vacuum	41
Valves, Safety	41, 42
Valves, Patent Safety	42
Valve Refitting Machines	7
Velocimeter	1
Vernier Calipers	16
Vise, Hand	9
Vise, Howard	9
Vise, Hall's	9
Vise, Leg	9
Vise, Merrell's	9
Vise, Parker's	9
Vise, Planer	9
Vise, Penfield	8
Vise, Pipe	8
Vise, P. Wright	9
Vise, Stephens'	9
Vise, Simpson's	9
Vise, Smith's	8
Vise, Solid Box	9
Vise, Union	8
Valves, Star	19
Valves, Patent Check	19
Valve Seat Planer	189, 19
Waste	15
Water Gauges	1
Water Stations	3
Water Columns	3
Washburn Chucks	10
Washers, Rubber	
Washer Cutters	16
Watchman's Clocks	1
Wheelbarrows	15
Wrenches, Screw	9
Wrenches, Gas Cock	5
Wrenches, Basin	8
Weighing Machines	
Weston's Ratchet Drills	9
Westcott Chuck	10
Wire	15
Wire Cloth	15
Wire Cutter	16
Wire Gauge	16
Wire Rope	1
Wire Straightening Machine	1
Wire Shears	1
Wicking	
Whistle Chimes	
Whistles, Steam	
Whistle Valves	
Window Brushes	1
Whiton's Chucks	1
Whiton's Drill	
Worcester Drills	
Water Coolers	1
Washers	1
Wrench, Eureka Combination	1
Zinc	1

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⅝ "	$4 80	4 80	5 40	5 40	6 00	6 60	7 20	7 80	8 40	9 00	9 60	10 80	12 00	16 00	20 00	24 00
¾ "	6 60	6 60	6 60	6 60	7 20	7 20	7 80	8 40	9 00	9 60	10 20	11 40	12 60	18 00	24 00	36 00
⅞ "	8 40	8 40	8 40	8 40	8 40	9 00	9 60	10 20	10 80	11 40	12 00	15 00	18 00	24 00	30 00	48 00
1 "	10 80	10 80	10 80	10 80	10 80	10 80	10 80	11 40	12 00	13 20	15 00	18 00	24 00	31 20	39 00	60 00

These Gauge Glasses are imported by me direct from Perth, Scotland, and are warranted genuine and equal to any in the market.

Also furnish these tubes closed at one end, for special purposes.

RUBBER WASHERS, to fit Tubes for Water Gauges, all sizes.....60 cts. per doz.

WATER GAUGES,

WITH GENUINE SCOTCH GLASS TUBES.

Fig. 3.

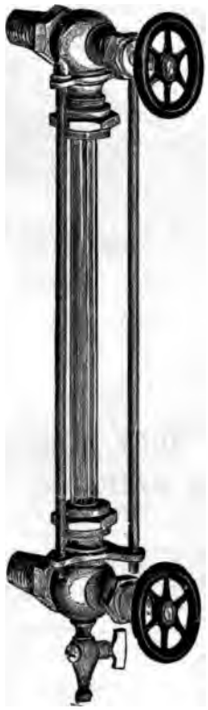


Fig. 4.

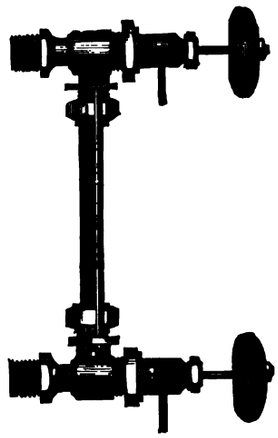


Fig. 5.

Water Gauge and Gauge Cocks Combined.

Fig. 6.

Fig. 3.	A,	Screwed for	½	inch pipe—	⅝	glass.....		$5 00
	B,	"	½	"	⅝	"		7 00
	C,	"	¾	"	¾	"		10 00
	D,	"	¾	"	¾	"		12 00
Fig. 4.	E,	"	½	"	⅝	"		7 50
	F,	"	¾	"	⅝	"		10 00
Fig. 6.	G,	"	¾	"	⅝	" Self-closing when glass breaks.....		6 00
	H,	"	¾	"	⅝	" " " " " "		9 00
	I,	"	¾	"	⅝	" " " " " "		12 00
	J,	"	¾	"	⅝	" " " " " "		18 00
Fig. 5.	K,	"	½	"		.....		7 50
	L,	"	¾	"		.....		9 00
	M,	"	¾	"		.....		12 00

STEAM AND VACUUM GAUGES.

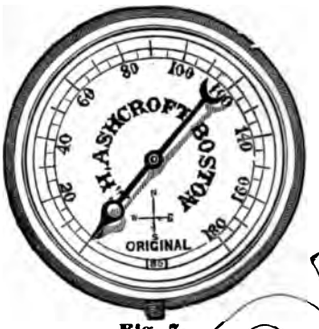


Fig. 7.

THE ORIGINAL ASHCROFT "BOURDON SPRING" STEAM AND VACUUM GAUGES.

No. 1,	Brass Case (deep case), 10 inch Dial, Engraved, High or Low Pressure	$50 00
" 1,	Brass Case (shallow case), 10 inch Dial, Plain, High or Low Pressure	40 00
" 2,	Brass Case (deep case), 8½ inch Dial, Engraved, High or Low Pressure	45 00
" 2,	Brass Case (shallow case), 8½ inch Dial, Plain, High or Low Pressure	30 00
" 3,	Brass Case (deep case), 6¾ inch Dial, Engraved, High or Low Pressure	35 00
" 3,	Brass Case (shallow case), 6¾ inch Dial, Plain, High or Low Pressure	25 00
" 3½,	Iron Case, 6¾ inch Dial, High or Low Pressure,	16 00
" 4,	Brass " 6 " " " "	20 00
" 5,	" " 5½ " " " "	18 00
" 6,	Iron " 6 " " " "	14 00
" 7,	" " 5½ " " " "	10 00
" 8,	Brass " 4½ " " " "	10 00
" 8½,	Iron " 4½ " " " "	10 00
" 9,	Brass " 3½ " " " "	10 00
" 9½,	Iron " 3½ " " " "	10 00

Octagon Rings for No. 1 to No. 3 Gauge, $5 extra.

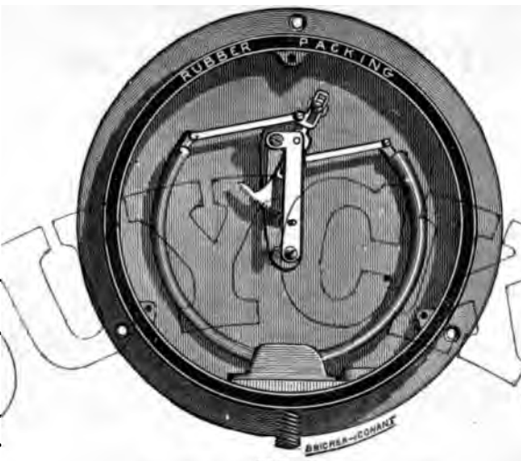


Fig. 8.

INTERIOR VIEW OF IMPROVED BOURDON.

THE E. H. ASHCROFT IMPROVED "BOURDON" STEAM GAUGES,

FOR LOCOMOTIVES AND STEAM FIRE ENGINES.

This Gauge is provided with an elastic ring, that effectually prevents all moisture caused by steam from gauge cocks entering the interior of the Gauge and corroding the movement.

A No. 1,	10	inch Dial,	Brass Case		$42 00
A " 2,	8½	" "	" "		32 00
A " 3,	6¾	" "	" "		22 00
" 3½,	6¾	" "	Iron "		18 00
A " 4,	6¾	" "	Brass "		18 00
A " 5,	5½	" "	" "		16 00
" 6,	6½	" "	Iron "		16 00
" 7,	5¼	" "	" "		12 00
" 8,	4½	" "	Nickel-Plated		13 00
" 8,	4½	" "	Plain		10 00

Fig. 9.

THE "ALLYN" PATENT STEAM GAUGE.

No. 1,	6	Inch, Brass Case,	Locomotive	$18 00
" 2,	6	" " "	Stationary	16 00
" 3,	6	" Iron "	"	12 00
" 4,	5½	" " "	"	10 00
" 5,	5½	" Brass "	"	12 00
" 6,	4½	" " "	"	10 00
" 7,	4½	" Iron "	"	8 00

All Gauges graduated from open Mercury Columns.

Fig. 10.

ASHCROFT'S SELF-TESTING STEAM GAUGE.

No. 1,	Brass Case,	10	inch Dial		$60 00
" 2,	" "	8½	" "		48 00
" 3,	" "	6¾	" "		30 00
" 4,	" "	6	" "		30 00
" 5,	" "	5	" "		30 00

Vacuum Gauges same price as Steam.

To know whether a Gauge is or is not correct, is of great importance to all who use steam power; the *Self-Testing Gauge determines that question.*

Fig 11.

PATENT RECORDING STEAM GAUGE.

No. 2,	8½	inch Dial,	Brass Case		$38 00
" 3,	6¾	" "	" "		30 00

SUBSCRIBE
50 & 52 JOHN ST

AMERICAN GAUGES.

Fig. 12.

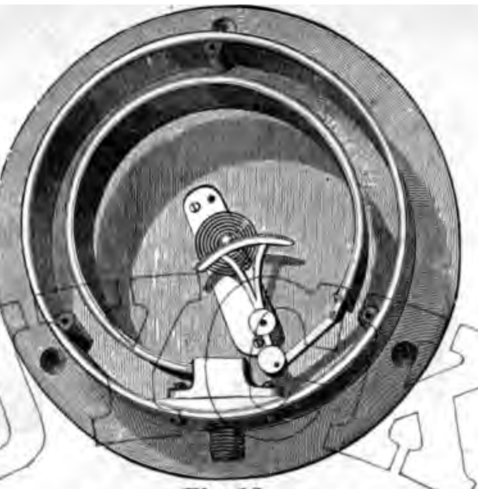


Fig. 13.
BOURDON MOVEMENT.

Fig. 15.

BOURDON, WITH LANE'S IMPROVEMENT.

No.	in. Dial	in. Case		LANE.	BOURDON.
No. 000,	12 in. Dial,	14½ in. Case,	Engraved	$80 00	$80 00
" 00,	10 "	12½ "	"	50 00	50 00
" 0,	9 "	11 "	"	40 00	40 00
" 0,	9 "	11 "	Plain	35 00	35 00
" 1,	8½ "	10½ "	Engraved	37 00	37 00
" 1,	8½ "	10½ "	Plain	32 00	32 00
" 2,	6¾ "	8 "	"	22 00	18 00
" 2,	6¾ "	8 "	Iron	20 00	16 00
" 4,	6 "	7¼ "	Brass	18 00	16 00
" 4,	6 "	7¼ "	Iron	16 00	14 00
" 5,	5½ "	6½ "	Brass	13 00	11 00
" 5,	5½ "	6½ "	Iron	11 00	9 00
" 6,	5 "	6 "	Brass	12 00	10 00
" 6,	5 "	6 "	Iron	10 00	8 00
" 7,	4¾ "	5 "	Brass	10 00	9 00
" 7,	4¾ "	5 "	Iron	8 00	7 00
" 8,	3¾ "	4½ "	Brass	....	9 00
" 9,	2½ "	3 "	"	....	8 00

Special cheap Gauge, 5 inch Dial, Iron Case, $42 per dozen.

THE ALLEN GAUGE.

No. 00,	Brass Case,	4¼ inch Dial,	Stationary	$10 00
" 00,	Iron "	4¼ "	" "	8 00
" 0,	Brass "	5¼ "	" "	12 00
" 1,	Iron "	5½ "	" "	10 00
" 2,	" "	6 "	" "	12 00
" 1,	Brass "	6 "	" "	16 00
" 2,	" "	6¾ "	" Locomotive	19 00

Fig. 14.
Lane Improved Movement.

UTICA GAUGE.

IRON CASE.

No. A, 3½	inch, for Air	$8 00
" O, 3½	" " Steam	8 00
" 1, 5	" Pressure	10 00
" 2, 6	" "	12 00
" B, 6¾	" " or Vacuum	16 00

STEAM METAL CASE.

No. 2½, 3½	inch Pressure	$9 00
" 3, 5	" "	15 00
" 4, 6	" Stationary	18 00
" 5, 6	" High Pressure	18 00
" 6, 6¾	" Locomotive, Stationary, or Vacuum	22 00
" 7, 8	inch, Pressure or Vacuum	34 00
" 8, 8½	" " "	40 00
" 9, 10	" " "	55 00

Gauge Cocks furnished with all Gauges, excepting Nos. A, O, and 2½.

TEST GAUGES.

No. 7, 8 inch, Ornamented Dial, 300 lbs.	$39 00
" 8, 8½ in., Ornamented Dial, 300 lbs.	45 00
" 9, 10 inch, Ornamented Dial, 300 lbs.	60 00

Fig. 16.

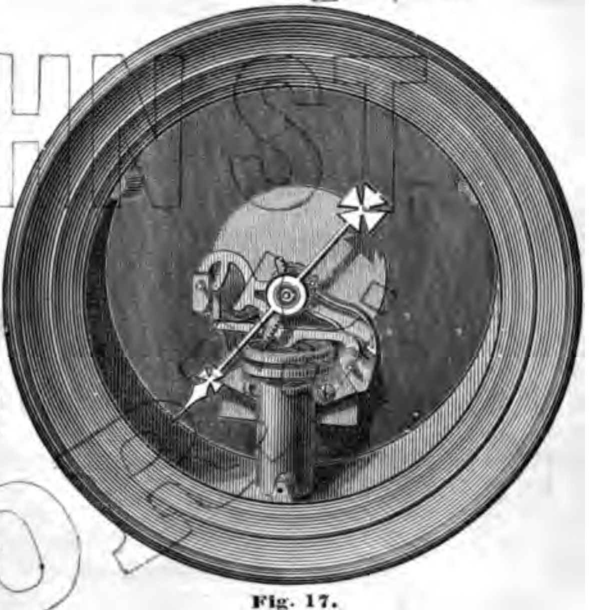


Fig. 17.

BUFFALO STEAM GAUGE.

No. 1,	9 inch	Brass Case,	Engraved Face	$50 00
" 2,	8 "	" "	" "	40 00
" 3,	8 "	" "	Electrotyped Face	30 00
" 4,	7 "	" "	" "	25 00
" 5,	6 "	" "	" "	20 00
" 6,	5 "	" "	" "	16 00
" 7,	3 "	" "	" "	8 00
" 8,	8 "	Iron "		25 00
" 9,	7 "	" "		20 00
" 10,	6 "	" "		17 00
" 11,	5 "	" "		14 00
" 12,	6 "	" "		12 00
No. 13,	5 inch	Iron Case		10 00
" 14,	4 "	" "		8 75
" 15,	3 "	" "		7 00
" 16,	5 "	Brass "	Electrotyped Face	13 00
" 17,	4 "	" "	" "	15 00
" 18,	4 "	Iron Case		8 00

All Gauges furnished with Cock and Syphon complete. No extra charge.

All Gauges manufactured by this Company are WARRANTED, and all Gauges indicate 200 lbs.

Fig. 18.

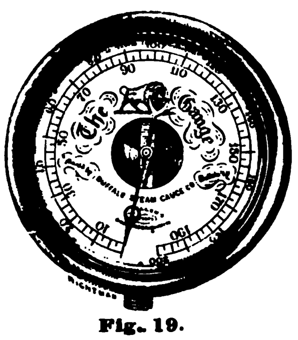


Fig. 19.

EASTMAN STEAM GAUGE.

Fig 20.

Gauges, 8 inch Dials, indicating different pressures, namely: 100 lbs., 130 lbs., 150 lbs., 190 lbs., and 200 lbs.

Silvered Gauge.....	$30 00
Brass "	23 00
Iron Round Gauge...	21 00
Iron Gauge.....	19 00

Including Stop-Cock and Connecting Union.

Fig 21.

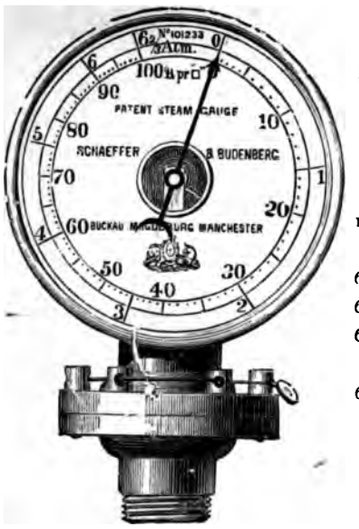


Fig. 22.

SCHAEFFER & BUDENBERG.

(IMPORTED.)

1½, 2, 3, and 4 inch Dial.....	$10
6 inch, 200 lbs.....	12
6 " Vacuum....	12
6 " Back Pressure, 5 lbs.....	12
6 inch, Vacuum and Pressure combined.....	15

COCKS FOR STEAM GAUGES.

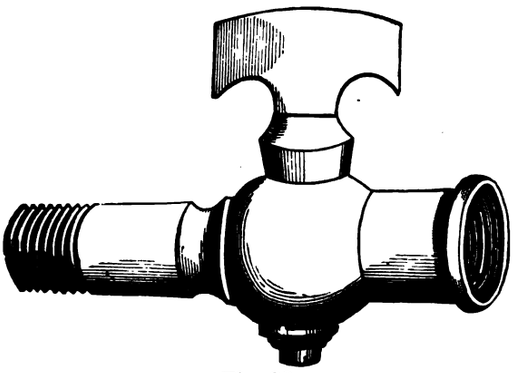


Fig. 23.

Finished, per dozen, full size..... $12 00

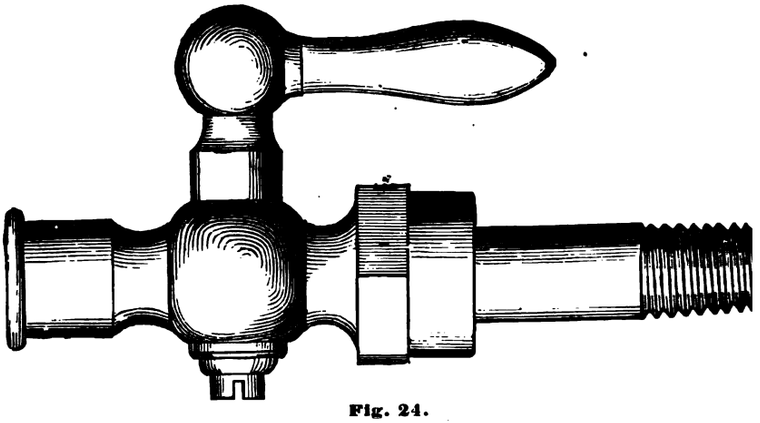


Fig. 24.

Ground Joint, per dozen, full size..... $2

HYDRAULIC GAUGES.

12	inch	Dial,	Brass	Case,	2000 to 20,000 lbs.....	$125 00
10	"	"	"	"	2000 to 20,000 "	100 00
9	"	"	"	"	2000 to 20,000 "	85 00
8½	"	"	"	"	2000 to 16,000 "	80 00
8½	"	"	Iron	"	2000 to 16,000 "	70 00

6¾	inch	Dial,	Brass	Case,	2000 to 10,000 lbs.....	$
6¾	"	"	Iron	"	2000 to 10,000 "	
6	"	"	Brass	"	1000 to 6,000 "	
6	"	"	Iron	"	1000 to 6,000 "	
6¾	"	"	Brass	"	500 lbs.....	

HYDRAULIC INDICATOR.

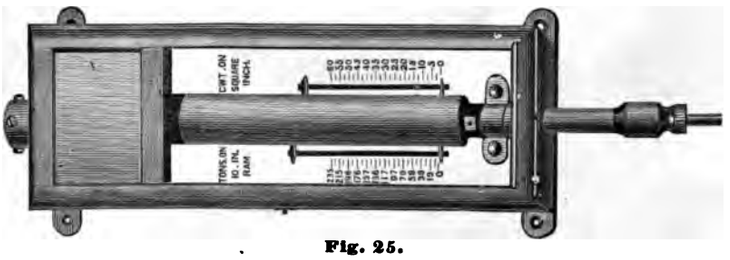


Fig. 25.

This Indicator is our latest improved, and is warranted perfect and correct..... $50 00

STEAM GAUGE SYPHON.

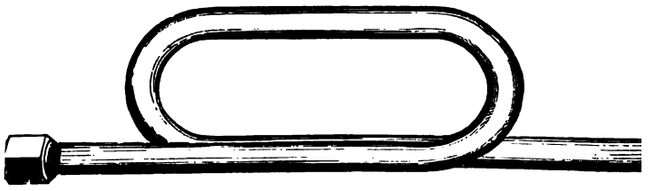


Fig. 26.

A Syphon is found indispensable in all cases, for every kind of Gauge, and no Gauges should be put up without the Syphon being attached thereto. Per dozen.....

SPECIALS.

Maximum Hands applied to Gauges, when desired, at ... $5 00 per gauge. | Name and Address of parties put on Gauge Dials at.... $3 50 per c

Gauges of all kinds repaired or tested on the premises, by experienced men, and guaranteed for one year.

Gauges for special purposes made to order.

MERCURIAL SYPHON STEAM GAUGE.

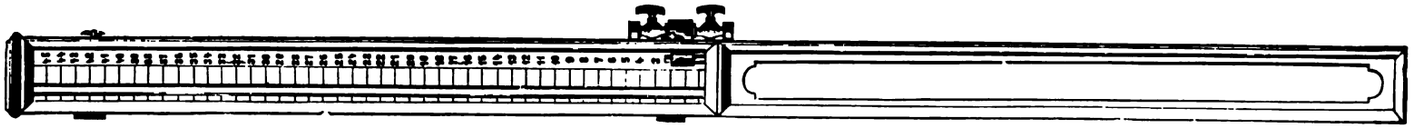


Fig. 27.

With Glass Tube, in Black-Walnut Case, each..... $35 00

MERCURIAL SYPHON STEAM GAUGE

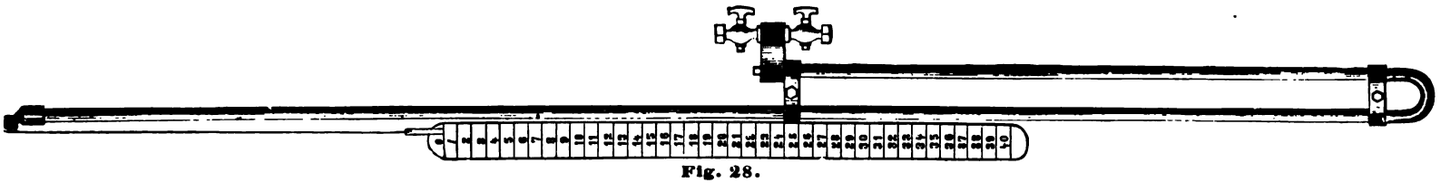


Fig. 28.

With Pulley, or Stick, Mortised Iron Tube, each..... $25 00

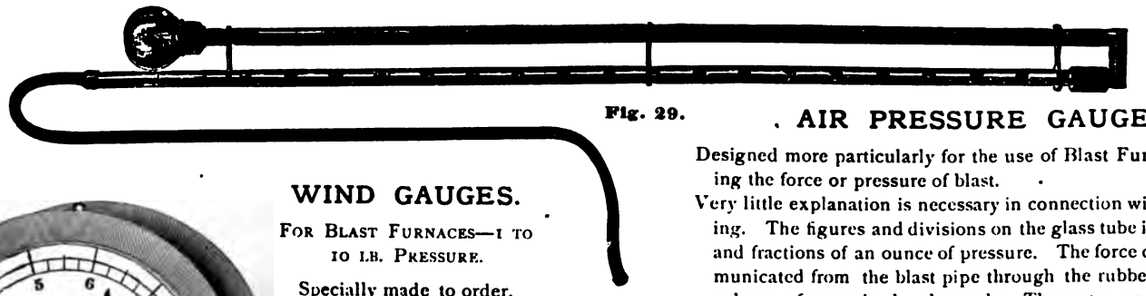


Fig. 29.

AIR PRESSURE GAUGES.

Designed more particularly for the use of Blast Furnaces, for testing the force or pressure of blast.

Very little explanation is necessary in connection with this engraving. The figures and divisions on the glass tube indicate ounces and fractions of an ounce of pressure. The force of blast is communicated from the blast pipe through the rubber tubing to the column of water in the glass tube. The water, as it is driven out of the tube, finds its way up into the glass reservoir. By this arrangement the trouble of measuring with a rule is avoided, as the degree of pressure or force of blast can be seen at a glance. $25 00.

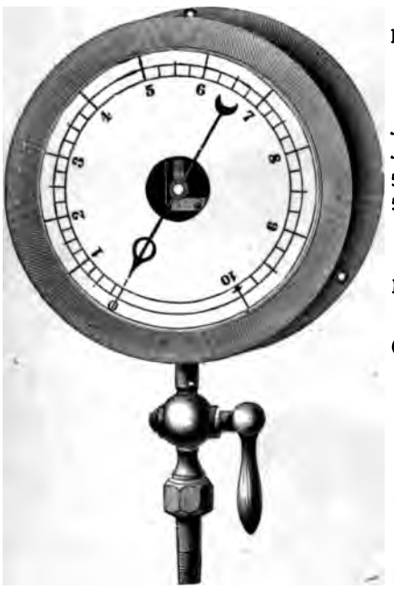


Fig. 30.

WIND GAUGES.

FOR BLAST FURNACES—1 TO 10 LB. PRESSURE.

Specially made to order.

4 in. Dial, Iron Case, $10 00
4 " " Brass " 12 00
5 " " Iron " 13 00
5 " " Brass " 15 00

BEST DISTILLED MERCURY,

For Gauges, in 5 lb. Flasks, at..... $ per lb.

GAS FITTERS' TEST GAUGE.

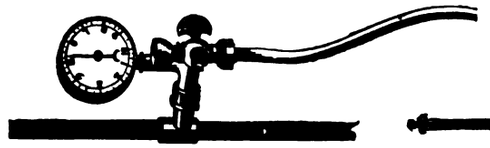


Fig. 31.

Cut shows Gauge Cock, Ether Cup, and Hose Attachment.

3 inch Brass Case, with Cover, including Cock and Ether Cup... $13 50

GAS FITTERS' MERCURY GAUGE.

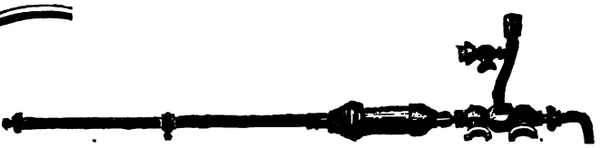


Fig. 32.

Price..... $10 00

SPECIAL GAUGES, FOR GAS HOUSES, TO ORDER.

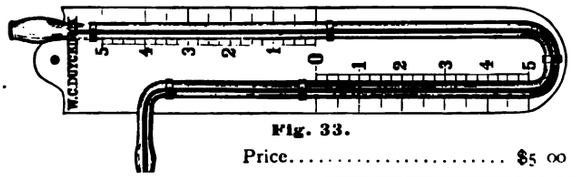


Fig. 33.

Price..... $5 00

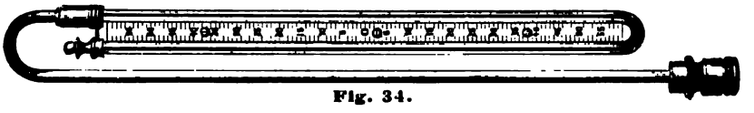


Fig. 34.

Price..... $10 00

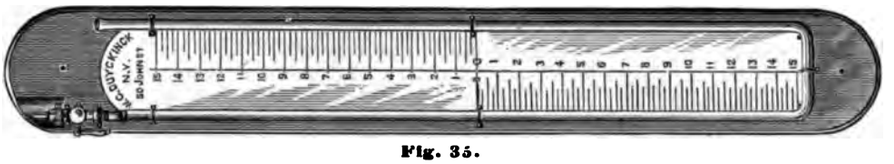


Fig. 35.

Plain..... $30 00 | Plated..... $35 00

STEAM GAUGE TEST PUMPS.

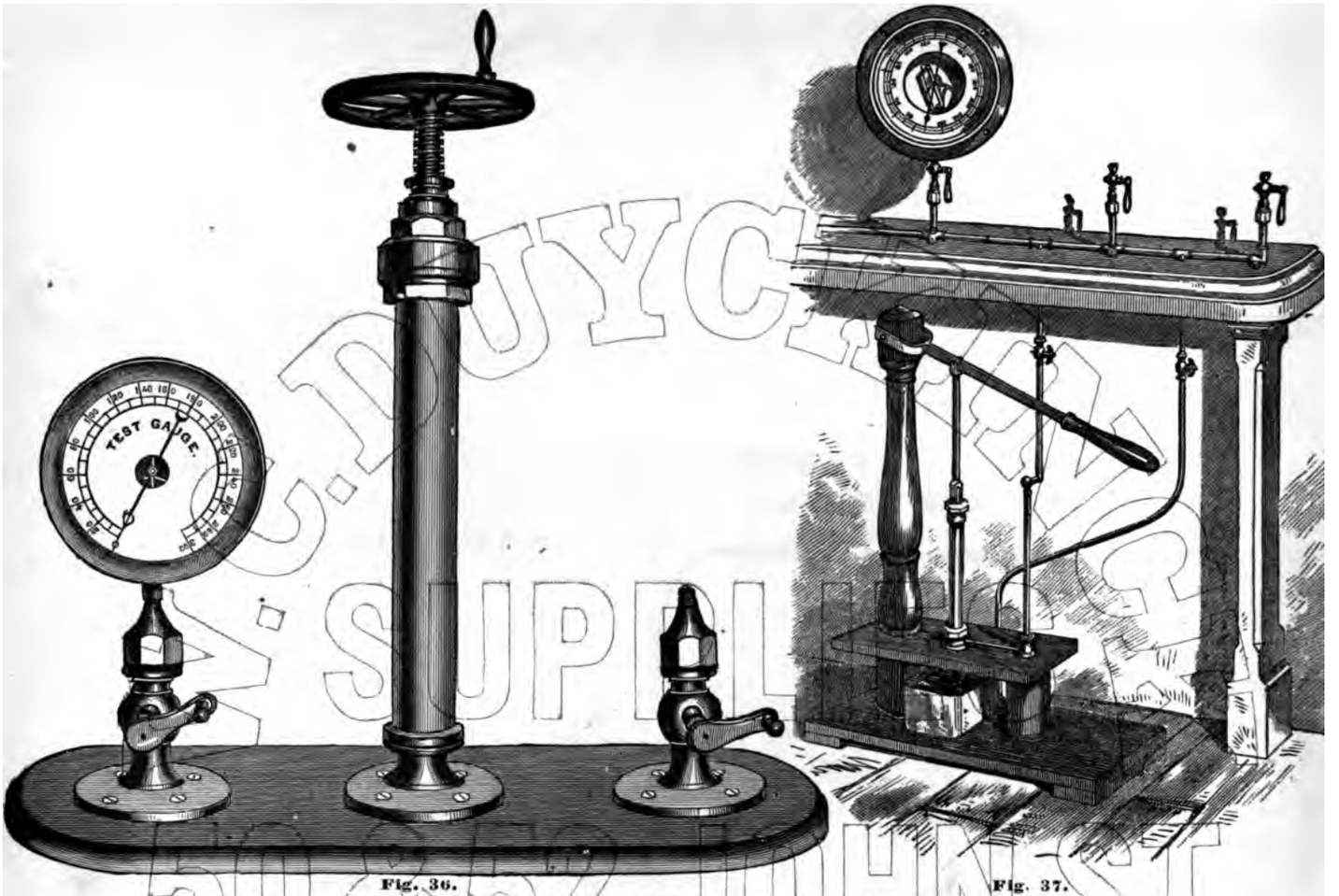


Fig. 36. Fig. 37.

Pump alone, either of the above styles..... $45 00

WOOD'S PATENT SQUARE INCH TEST VALVE.

Fig. 38.

Price of Apparatus as shown in Figure 2... $18 00

We also furnish a **Cheap, but Complete Test Pump,** to be used with this square inch Valve. It is fitted with a reservoir for water, and connections for the Valve and a Gauge.

With Test Valve complete..... $25 00

Without Valve, with connections for two Gauges, 10 00

Fig. 1 shows the way in which the Test Valve may be connected with any force pump. In the cut it is shown with the weighted yoke in place. D is the pump, with the reservoir of water at D. By turning the wheel the water is forced into the Test Gauge, E, and beneath the valve, and also in the gauge to be tested, which is placed at F. The pieces of iron attached to the yoke have been previously weighed, so that the valve must lift and the water escape by the overflow pipe, G, the moment such known weight is exceeded by the water pressure. The gauge or gauges should then indicate a pressure equal to the combined weight of the valve, yoke and weight attached to the valve.

Price of Apparatus as shown in Fig. 1, *excepting the Test Gauge*, with a Walnut Chest, in which the whole is packed..... $85 00

Or with Brackets to go against a wall, or on a stand with iron legs, *but no chest and no gauge*..... 75 00

Fig. 39.

Fig. 2 consists of a brass base, provided with a pipe, A, to be connected with a pump. At B is a hardened steel valve and seat, the latter having knife edges for the valve to rest upon, and being made exactly one square inch in area. The valve is guided by a guide-stem in the seat. The water pipe, A, opens directly under the valve, as shown by the dotted lines. The valve when in place, makes a tight joint with the knife edges, and the pressure beneath is confined until it exactly balances the combined weight of the valve, yoke, C (which rests by a pointed projection on the valve), and any extra weight which may be suspended from the lower hook of the yoke. With this the accuracy of a gauge, at any specified point of its registry, can be ascertained.

ENGINE REGISTERS.

Fig. 40.

12	inch,	Brass Case,	6	figures	$95 00
12	"	"	8	"	100 00
10	"	"	6	"	70 00
10	"	"	8	"	75 00
9	"	"	6	"	67 00
9	"	"	8	"	72 00
8½	"	"	6	"	65 00
8½	"	"	8	"	70 00
6¾	"	"	6	"	45 00

MARINE CLOCKS.

CASES SIMILAR TO THOSE OF ENGINE REGISTERS.

No.	1½,	3¾	inch,	S. Thomas,	1 day	$26 00
"	2,	8	"	"	1 "	50 00
"	2,	8	"	"	8 "	53 00
"	3,	8½	"	"	1 "	58 00
"	3,	8½	"	"	8 "	61 00

With finest Marine, Full Jeweled (Imported) Movements.

No.	2½,	8	inch,	8	day $65 00
"	3½,	8½	"	8	" 75 00
"	4,	10	"	8	" 85 00

ENGINE REGISTERS.

Fig. 41.

WOODEN CASE.

5 figures, each	$15 00
6 " "	20 00

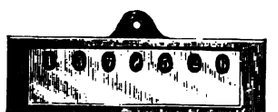


Fig. 42.

METAL CASE.

7 figures, each	$20 00
With Wheel Attachment	25 00

REVOLVING RULE.

Fig. 43.

To measure paper or felt as it rolls on cylinders. Also indicates lineal distance passed over. May be used to measure lumber. Graduated according to objects designed, in inches, feet, or miles.

With Alarm, ordinary size, $30 00

Special sizes made to order.

SPEED INDICATOR.

TO ASCERTAIN THE NUMBER OF REVOLUTIONS MADE BY A SHAFT IN ANY GIVEN TIME.

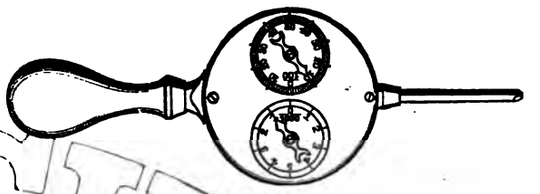


Fig. 44.

Plain	$6 00
Plated	7 00

BROWN'S REVOLUTION INDICATOR.

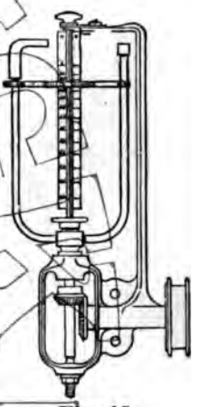


Fig. 45.

This instrument shows at a glance, by the height of a column of mercury, the number of turns per minute made by a Steam Engine, without either counting or using a watch.

It differs from the Engine Counter commonly used, which registers continuously the turns made per hour or day, but does not indicate the speed at any instant of time, simply by inspection, as does the Revolution Indicator.

There are many engines which have to run with varying speeds for different operations, also engines controlled entirely by hand; for such the Revolution Indicator will be found particularly useful; also to ascertain the regularity of the speed due to the use of any particular governor.

It is driven like a governor, either directly from the engine shaft, from the line shafting, or from a horizontal countershaft.

Parties ordering or making inquiries should state the average and greatest speed of engine; also size and speed of driving shaft or pulley.

Price $60 00

SPEED INDICATOR.

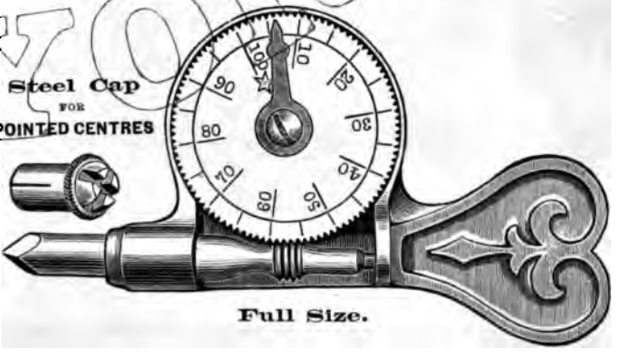


Fig. 46.

Each $2 00

QUICK SUPPLIES 50852 ATLANTIC

COMBINATION COLUMNS.

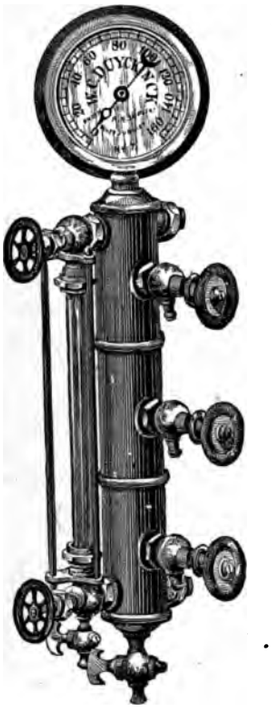


Fig. 47.

Complete as above, $15 00

Fig. 48.

PATENT GAUGE COCKS AND WATER GAUGE COMBINED.

With Steam Gauge Attachment,.....

Without Steam Gauge.....$9 and $12 00

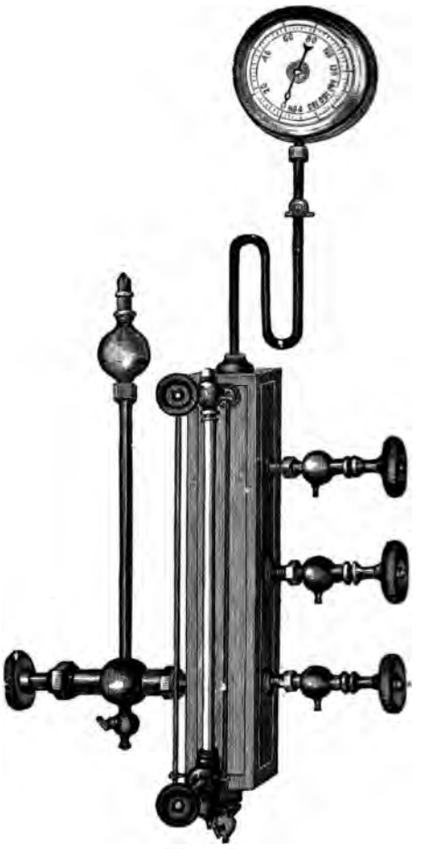


Fig. 49.

No. A includes No. 7 Gauge, ⅜ Gauge Cocks, and Water Gauge, but no low water detector. (Round body).....$18 00

No. B includes No. 6 Gauge, ½ Gauge Cocks, and Water Gauge, but no low water detector. (Square body)..... 25 00

No. C includes No. 4 Gauge, ½ Gauge Cocks, Water Gauge and Low Water Detector. (Octagon body)..... 50 00

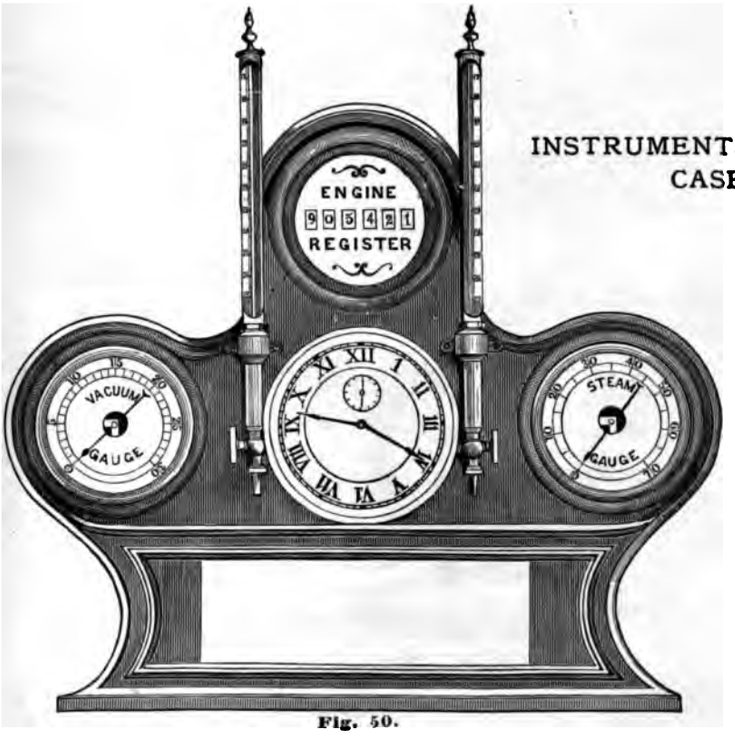


Fig. 50.

INSTRUMENTS IN ONE CASE.

One case containing six Instruments, $300 00

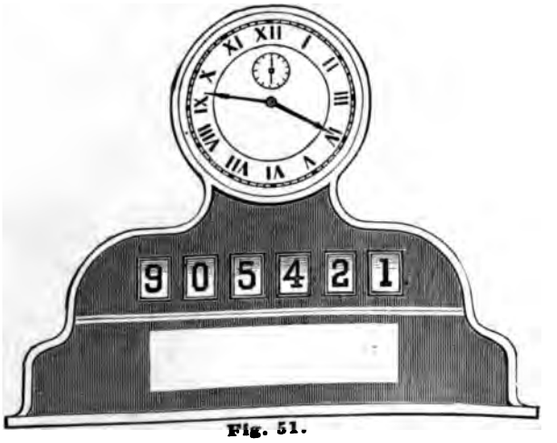


Fig. 51.

Engine Register with Clock or Gauge, $100 00

RICHARDS
PARALLEL MOTION INDICATOR.

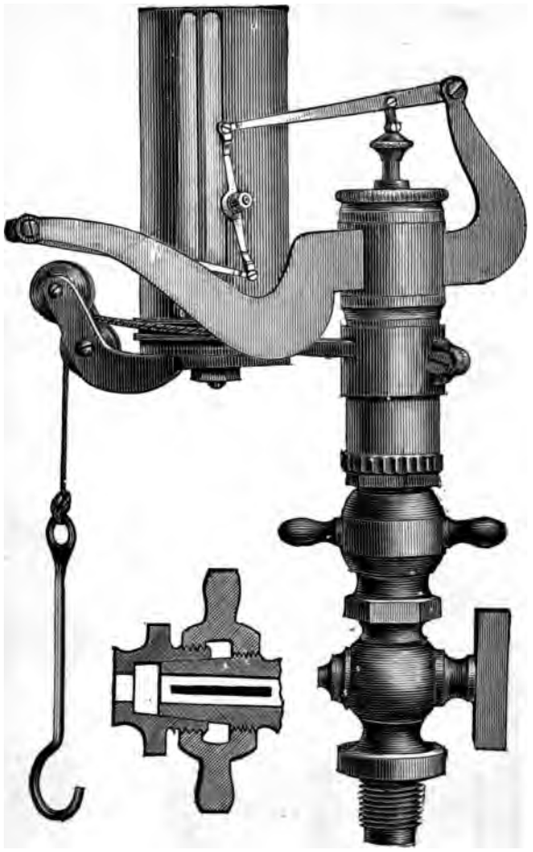


Fig. 52

Indicator, with one Spring, Scale, and Cock	$80 00
Extra Springs and Scales, 12, 16, 24, 30, 40, 60, each,	6 00
Extra Cocks "	2 75
Elbows	2 50
Carrying Pulleys	1 00
Parallel Rule	7 00
Clamps	3 00

A Treatise on the Indicator, by F. W. Bacon, M.E., and Member of Society of Civil Engineers, furnished with each Instrument. For sale separately. $1 00.

NEER'S ROTARY DYNAMOMETER.

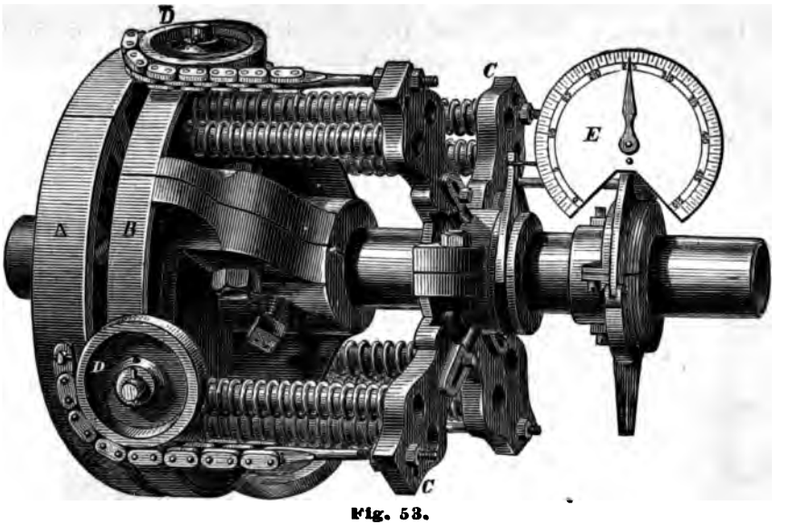


Fig. 53.

This Dynamometer will show at any moment the amount of power being used from the shaft to which it is attached ; or the capacity of any engine or water-wheel ; or the necessary power required to propel any machine. Also the adhesive or comparative power of various kinds of belting. It will also indicate any friction caused by irregularities of shafting, etc. It also enables the public to deal in motive power as in other property, by actual weight or measurement, and with certainty and accuracy.

All are made to move a resistance equivalent to elevating thirty-three thousand pounds one foot, with one hundred revolutions per minute, each revolution being one per cent of what is indicated on the dial ; for each revolution over one hundred, add one per cent to what is indicated, and deduct for any number less.

20-horse—fits	2½ inch Shaft, each	$175 00
50 "	" 3 " " "	250 00
100 "	" 3 to 4 inch shaft, each	325 00
150 "	" 4 to 5 " " "	400 00

With 1-16 inch packings to reduce each size shaft one inch.

DIRECTIONS FOR APPLYING THE DYNAMOMETER.

After removing the set screws or key of the pulley to be used, see that it is free on the shaft ; place the first disk true and firm upon the hub, then notice which way the force is to be exerted, and bring the chains the way they are to be used, and set up the nuts before placing the other disk ; then place it firm to the shaft, and see that there is no bind between them ; bring the disks in position, and place the curved stop on the disk so as to receive the stud of the other disk ; place the springs and cross-arm, and bring the chains around the rollers, on a line with the shaft ; bring the cross-arm gently against the springs, and set up the nuts with the finger and thumb until they bring the cross-arm against the springs without compressing them ; set up the jamb-nuts with a wrench ; see that the chains have no twist ; when you have placed collar and dial, see that it works freely, and fasten the dial frame to prevent it from revolving ; oil all the working parts.

We prepare collar and bridges, where needed, to apply the Dynamometer at couplings, removing the bolts.

Fig. 54.

The Duckham Patent Suspended Self-Indicating Weighing Machine.

Capacities, from one to one hundred tons.

This machine is used on a crane, or any lifting apparatus, and indicates the weight on the dial directly the article is lifted. It is accurate, requires no adjusting, portable, and the greatest labor-saving weigher ever introduced.

Capacity of Machine, tons,	1	2	3	5	10	20	30	50	100
Smallest w'ght indicated, lbs.	5	10	12½	25	50	100	100	100	200
Weight of Machine, lbs.	40	50	50	70	95	180	250	450	600
Price, boxed...	$120	120	120	150	190	240	310	475	650

DYNAMOMETER.

Fig. 55.

Two solid curved steel bars, which act as springs, are shown in the drawing. The weight or strain applied has the tendency to straighten these springs, and the slightest motion of the same is multiplied and transferred by a suitable arrangement to a pointer, which indicates the correct weight on the dial. Two strong rods placed outside the springs, moving loosely in their joints, act as safeguards in case the springs break.

Price..... $300 00

PYROMETERS.

For Blast Furnaces, Galvanizers', Drying and Bakers' Ovens, Oil Stills, Vulcanizers, Superheated Steam, Boiler Flues, etc., they are invaluable, being more easily read than Thermometers, and much more durable.

Fig. 56.

BROWN'S PATENT GAUNTLET PYROMETER.

Registers accurately up to 1200 degrees, and is easily adjusted.

For blast furnaces, galvanizing, wire annealing, etc. $50 00

For bakers' ovens, 800 degrees, long stem 40 00

For bakers' ovens, 800 degrees, short stem 30 00

In ordering always give desired length, from A to B.

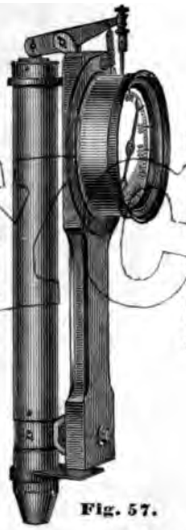


Fig. 57.

BROWN'S PATENT HOT BLAST PYROMETER.

On applying this instrument to any orifice in the blast pipe, the hot air rushing through will give an accurate indication in less than one minute. By having several plug holes in the length of the blast pipe, its temperature at any part may be ascertained, and all four tuyeres may be tried in five minutes. It is very useful to ascertain the loss of temperature between the stove and tuyere, and the gain derived from covering the pipes.

Fitted in hardwood box $65 00

BULKLEY'S PATENT PYROMETER.

Fig. 58.

Fig. 59. Fig. 60.

Fig. 58. For bakers' ovens, oil and tar stills, drying and japan kilns, etc. $30 00

Fig. 59. For superheated steam, varnish kettles, galvanizers, etc. 30 00

Fig. 60. For blast furnaces, with patent attachment for preserving expansion stem from injury by heat 35 00

SALINOMETERS.

THERMOMETERS.

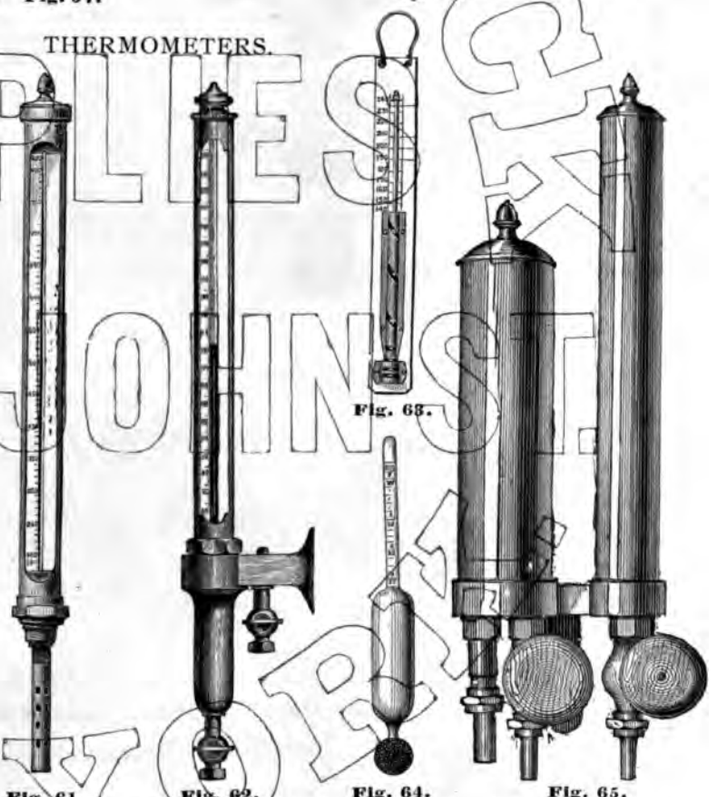


Fig. 61. Fig. 62. Fig. 63. Fig. 64. Fig. 65.

Fig. 61. High Grade, from 300 dgs. and upward, $5 00 to $25 00

" 62. Hot well Thermometer ..... 20 00 to 45 00

ORDINARY THERMOMETERS.

Size	7	8	10	12
Japan Case, per doz.	$5 00	$5 50	$6 50	$8 00
Copper " "			20 00	24 00
Mounted on wood, per doz	15 00		18 00	

Fig. 63. Salinometer Thermometer ..... each, $1 75

" 64. Salinometer Hydrometers, { Glass ..... " 1 25 / Copper ..... " 7 00 / Nickel-plated, " 8 00

Fig. 65. Salinometer, complete 50 00

Brine Pots 2 00

C.D. BULKLEY & CO. MACHINISTS' SUPPLIES 50 & 52 JOHNST. NEW-YORK

BUERK'S PATENT WATCHMAN'S TIME DETECTOR.

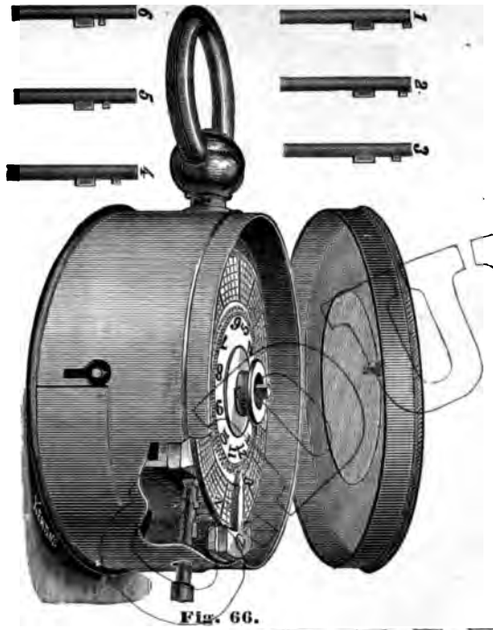


Fig. 66.

The above engraving is a view of a time detector, which is carried about by the watchman to all the different stations to be guarded. At each station is a key securely fastened to prevent him taking it with him. The watchman goes from station to station, takes the key fastened there, inserts it into the clock, gives it one turn, and goes on to the next, or any other station, for he is not bound to go in regular order. Thus a perfect record will be kept of each operation.

At A there is a number of sliding bars, which connect with the pricking points, so that by turning round the key the ward on it strikes a certain bar, and penetrates the dial paper B. By means of a flange on side of key, the key used for one station can not be used for any other station.

At night the watch is wound, set, and locked by the superintendent, so that the dial can not be seen by the watchman.

With any number of keys not over 12..... $80 00
Extra Paper Dials, cut ready for use, per 1000..... 1 00

IMPORTED BURK'S WATCHMAN'S CLOCK.

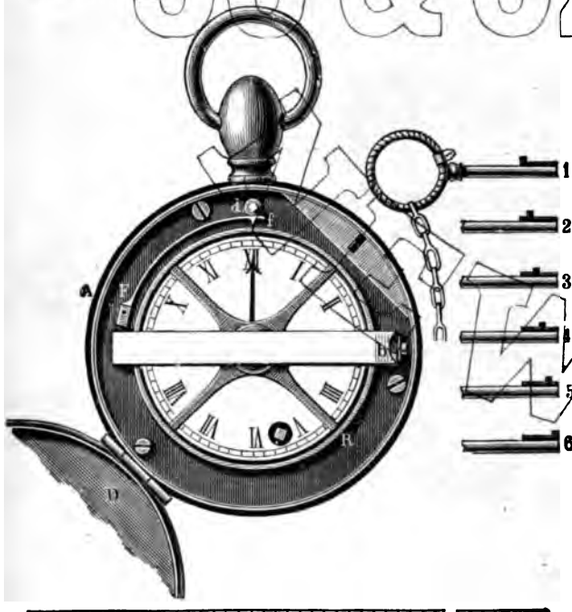
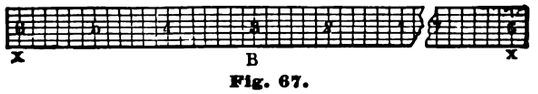
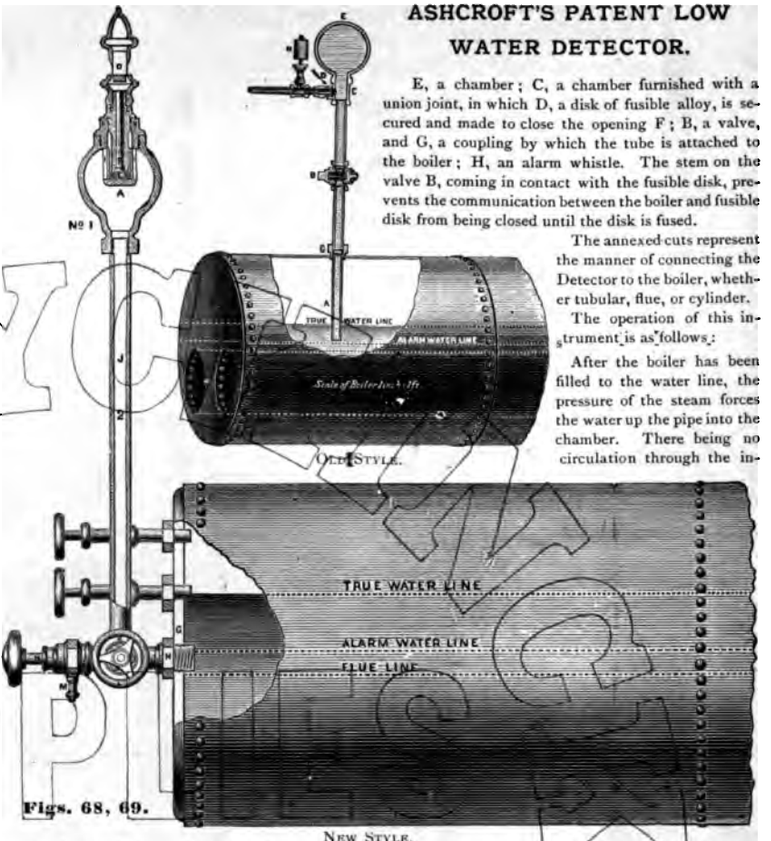


Fig. 67.

Complete, with 6 Keys, Slips, and Books..... .... $60 00
Can be arranged for 12, 25, and 50 stations.

ASHCROFT'S PATENT LOW WATER DETECTOR.



Figs. 68, 69.

OLD STYLE.

NEW STYLE.

E, a chamber; C, a chamber furnished with a union joint, in which D, a disk of fusible alloy, is secured and made to close the opening F; B, a valve, and G, a coupling by which the tube is attached to the boiler; H, an alarm whistle. The stem on the valve B, coming in contact with the fusible disk, prevents the communication between the boiler and fusible disk from being closed until the disk is fused.

The annexed cuts represent the manner of connecting the Detector to the boiler, whether tubular, flue, or cylinder.

The operation of this instrument is as follows:

After the boiler has been filled to the water line, the pressure of the steam forces the water up the pipe into the chamber. There being no circulation through the instrument so long as the lower end of the tube remains UNDER water, the column above the boiler will be of a comparatively low temperature, and the disk D will remain solid. But whenever the water in the boiler falls BELOW the end of the tube, the steam immediately displaces the water in it and melts the fusible disk, and, rushing out through the opening F, gives notice through the whistle that the water is falling to a dangerous point. To replace a disk, unscrew the part that holds the disk in place, insert the new disk, and, when it has touched the end of the valve-stem, screw in the part first removed; and, when it is in contact with the disk, unscrew or open the valve B, following up the disk by the screw which holds it in place.

NEW STYLE—All Brass	$30 00	FUSIBLE PLUGS.	
" " Iron Pipe and Ball	25 00	NEW STYLE—Per dozen	$1 50
OLD " Iron	30 00	OLD " " "	7 50

OIL TESTING MACHINE.

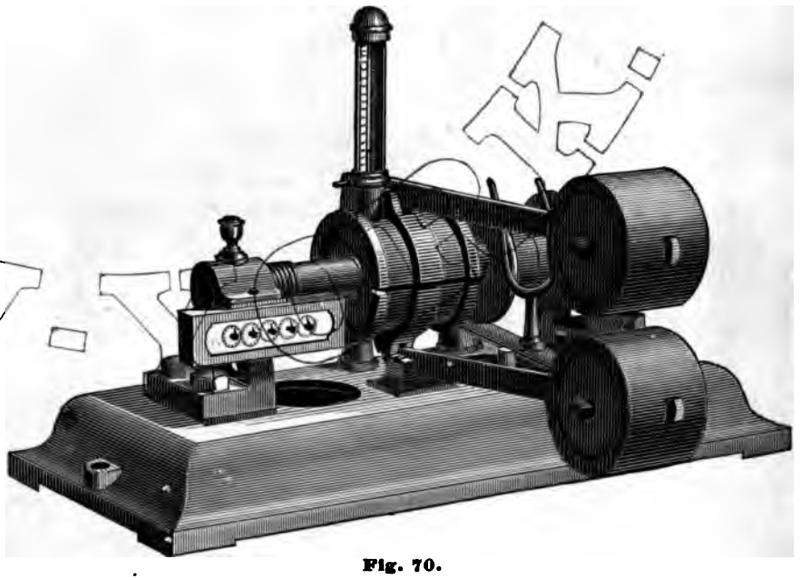


Fig. 70.

The object of this machine is to test the quality of oils used for lubricating purposes. It consists of a shaft mounted on centres, so as to rotate freely, upon which shaft a drum is fixed, and revolves with the shaft. To this drum brasses are neatly fitted, and held in position and pressed against the surface of the drum by levers and weights; and between the surfaces of the drum and of the brasses the oil is tested.

Price... .... $200

LOCOMOTIVE SPRING BALANCES.

Fig. 71.

Fig. 72.

Fig. 73.

SALTER'S.		MORTON'S.							
Imported direct, each,	$12 00	Lbs.....	50	75	80	84	96	100	150	200
" " "	15 00	Per doz.,	$70 00	85 00	95 00	100 00	110 00	130 00	150 00	165 00

CRAWLEY'S VELOCIMETER.

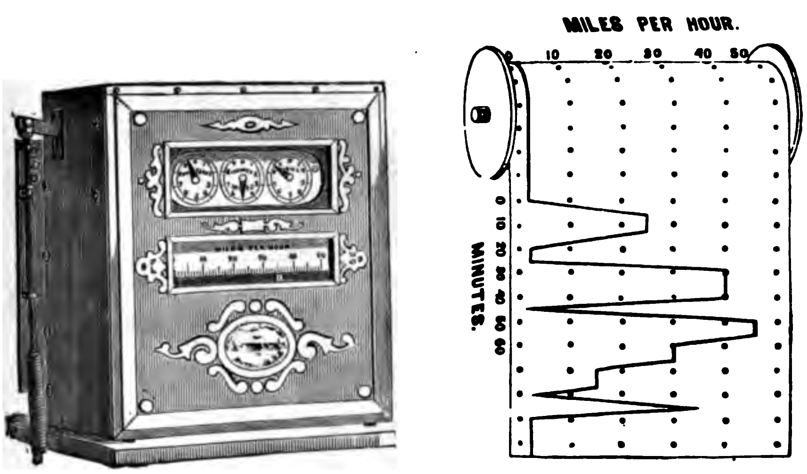


Fig. 76.

This Instrument will measure, and record on paper, the velocity of all Locomotives, Road-Vehicles, Revolving Shafts, Pumping Engines, Water-Wheels, Running Belting, Reciprocating Engines, etc., etc., to which it may be properly attached, and give the time and duration of all stoppages, and the aggregate amount of work done in any given time.

BOWSHER'S POWER OR MOTION INDICATOR.

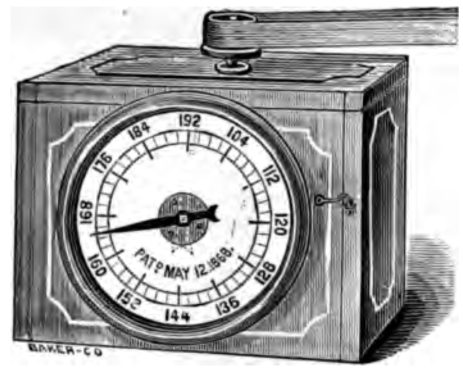


Fig. 74.

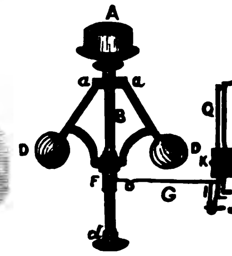


Fig. 75.

WHAT IT WILL TELL.

When applied to the millstones it will tell when there is any change in the feed, or in the condition of the grain, or if the spindle is heating; in fact, any thing that goes to affect the grade of the meal. (Several instances have been reported to us where the Indicator saved the spindle from being thus ruined, as well as from its other consequent damages, by giving its timely alarm.)

When applied to the machinery of a mill, it will tell when a belt is thrown off or on, an elevator or conveyer choked or broken, or any thing that affects the motion. Too much importance can not be attached to the steady running of mill machinery, and especially that of wheat cleaning, bolting, purifying, etc., etc.

When applied to the machinery wheel, it will tell when the motion of the water-wheel is increased or diminished by the rise or fall of the head, and when the steam is getting too high or too low in the boiler of the engine.

Single Dial Indicator..................................	$25 00
" " " with Alarm Bell	27 50
Double Dial Indicator.................................	30 00
" " " with Alarm Bell.................	32 50

No extra charge for Pulleys.

FIGURES ON DIAL PLATE.

The Dial Plate is so graduated and figured on each machine that it will tell the speed of any shaft to which it is attached, as follows, namely—on a

Machine, No.		Speed.		Tells the Speed,		
No. 1........	From	4 to	8	Within	1/8	of a revolution per minute.
" 2........	"	6 to	12.......	"	1/8	" " "
" 3........	"	7 to	14.......	"	1/8	" " "
" 4........	"	8 to	16.......	"	1/8	" " "
" 5.......	"	9 to	18.... ...	"	1/8	" " "
" 6........	"	12 to	24.......	"	1/8	" " "
" 7........	"	14 to	28.......	"	1/4	" " "
" 8........	"	16 to	32.......	"	1/4	" " "
" 9........	"	18 to	36.......	"	1/4	" " "
" 10... ...	"	21 to	42.......	"	1/4	" " "
" 11........	"	24 to	48.......	"	1/4	" " "
" 12........	"	28 to	56.......	"	1/2	" " "
" 13.......	"	32 to	64.......	"	1/2	" " "
" 14........	"	36 to	72.......	"	1/2	" " "
" 15........	"	42 to	84.......	"	1/2	" " "
" 16........	"	48 to	96.......	"	1/2	" " "
" 17........	"	56 to	112.......	"	1	" " "
" 18........	"	64 to	128.......	"	1	" " "
" 19........	"	72 to	144.......	"	1	" " "
" 20........	"	84 to	168.......	"	1	" " "
" 21...	"	96 to	192.......	"	1	" " "
" 22........	"	112 to	224.......	"	2	" " "
" 23........	"	128 to	256.......	"	2	" " "
" 24........	"	144 to	288.......	"	2	" " "
" 25........	"	168 to	336.......	"	2	" " "
" 26.... ...	"	192 to	384.......	"	2	" " "
" 27........	"	224 to	448.......	"	4	" " "
" 28........	"	256 to	512.......	"	4	" " "
" 29........	"	288 to	576.......	"	4	" " "
" 30........	"	336 to	672.......	"	4	" " "
" 31........	"	384 to	768.......	"	4	" " "
" 32.... ...	"	448 to	896.......	"	8	" " "
" 33	"	512 to	1024.......	"	8	" " "
" 34........	"	576 to	1152.......	"	8	" " "
" 35........	"	672 to	1344.......	"	8	" " "
" 36.	"	768 to	1536...	"	8	" " "
" 37........	"	896 to	1792.......	"	16	" " "
" 38	"	1024 to	2048.......	"	16	" " "
" 39........	"	1152 to	2304.......	"	16	" " "
" 40.......	"	1344 to	2688.......	"	16	" " "

This can be continued so as to show any rate of speed desired.

EXPLANATION.

The first column of figures represents the number of the machine.

The second, the number of revolutions, per minute, of the shaft to which it is attached, when the machine *begins to indicate.*

The third, the greatest number of revolutions, per minute, the shaft makes when the machine *ceases to indicate.*

The fourth, how nearly the speed is plainly figured and shown on each dial plate, respectively.

Example.—Suppose the average or working motion of a shaft to be 76 revolutions per minute; No. 16 machine would be most suitable, the figures on the dial plate of which run from 48 to 96, and it shows the exact number of revolutions (with 1/2 a revolution,) per minute, when the shaft is making over 48 and less than 69.

STEAM AND FIRE REGULATORS.

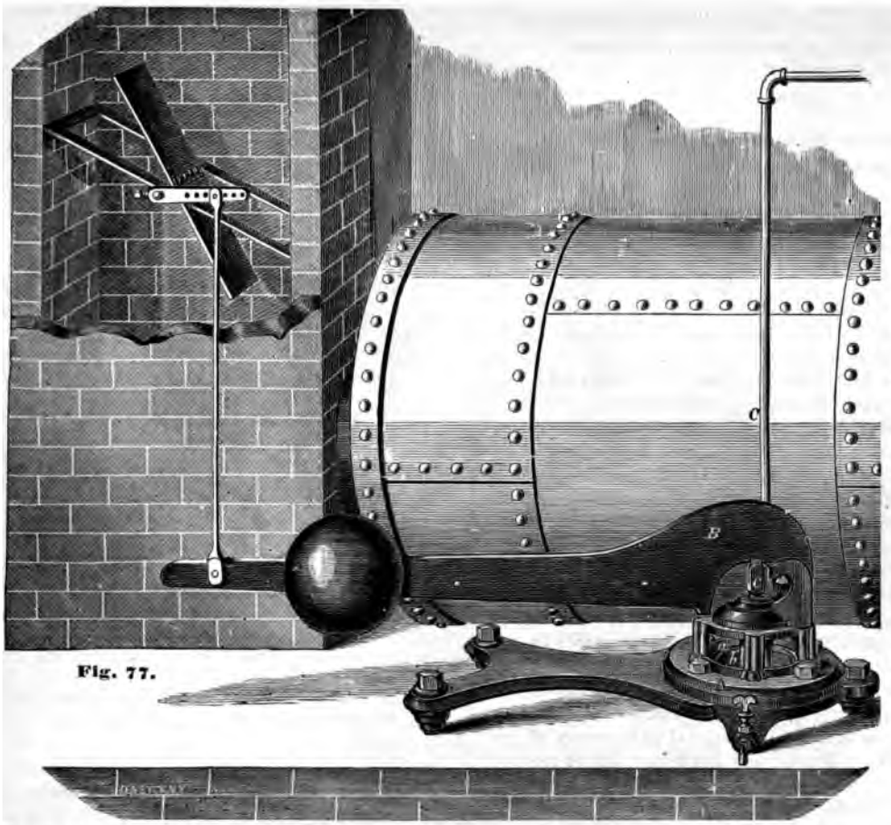


Fig. 77.

In estimating the Horse Power of Boilers, 10 square feet of heating surface for plain Cylinder Boilers } Are consider-
12 " " " " (fire and flue) " } ed equal to 1
16 " " " " (fire and tubes) Tubular " } horse power.

CLARK'S IMPROVED STEAM AND FIRE REGULATORS.

No. 1—Under 5 Horse Power Boiler, High Pressure..... $25 00
" 2—From 10 to 20 Horse Power Boiler, High Pressure..... 40 00
" 3— " 30 to 500 " " " " " 50 00
" 4— " 30 to 500 " " " Low " 75 00

DIAPHRAGMS FOR SAME. { No. 1 2 3 / Each, $1 25 2 00 3 00

FRICTION ROLLS AND STAND FOR FLUE, per set, $6 00.

KNOWLES' PATENT.

No. 2—Up to 4 Horse Power..... $30 00
" 3—From 4 to 20 Horse Power..... 40 00
" 4— " 20 to 50 " " 50 00
" 5—50 Horse Power and over..... 75 00

WOODRUFF'S PATENT BALANCE DRAFT REGULATOR.

Fig. 78.
HIGH PRESSURE.

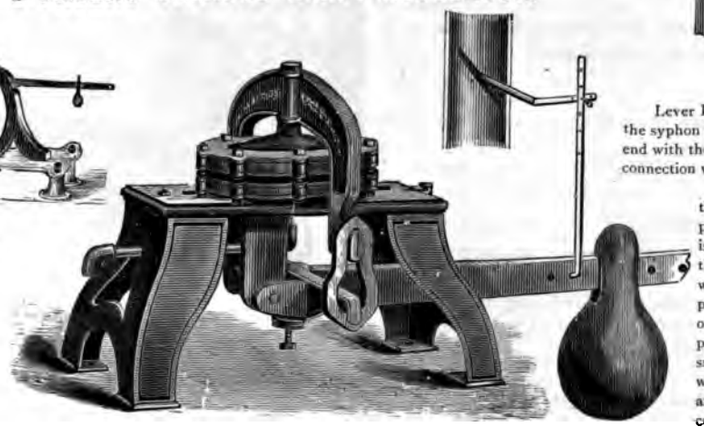


Fig. 79.—LOW PRESSURE.

No.	1	2	3	4	5	6
Horse Power,	4	4 to 8	8 to 20	20 to 50	50 to 100	100 to 200
Each,	$25 00	35 00	45 00	55 00	65 00	75 00

DAMPER REGULATOR.

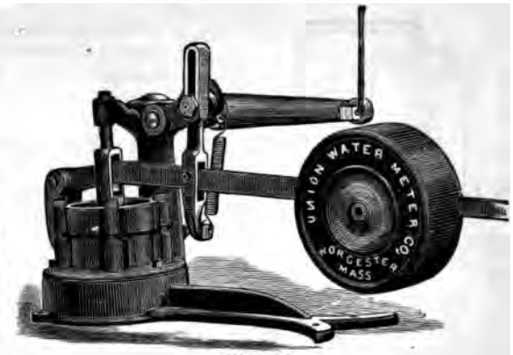


Fig. 80.

No. 1, each... $30 00 | No. 2, each... $50 00 | No. 3, each... $100 00

DAMPER REGULATOR,

FOR LOW PRESSURE BOILERS.

Fig. 81.

The above is a Damper Regulator for low pressure boilers, to be applied in dwellings, etc.

Price..... $5 00

"ACME" AUTOMATIC DRAFT REGULATOR.

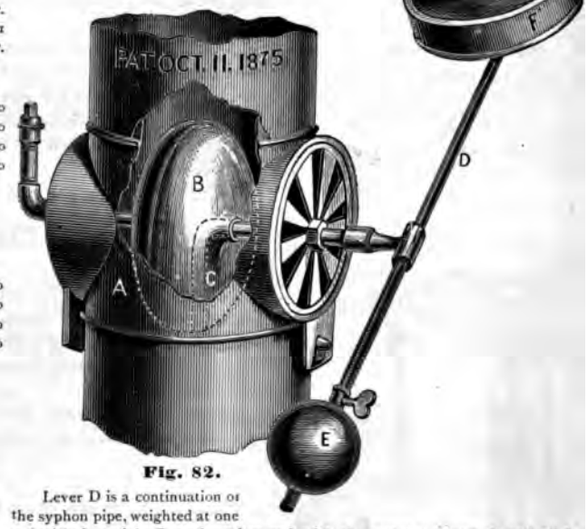


Fig. 82.

Lever D is a continuation of the syphon pipe, weighted at one end with the weight E, at the other end with the metal receivers F, and all in connection with the valves in the collar A.

The action is as follows: with a *moderate* amount of heat passing up the chimney, the water in the boiler B remains at or near the boiling point, and the valves remain closed, but as soon as the volume of heat is materially increased, steam is generated, which forces a portion of the water through the syphon pipe C into the lower metal receiver, which partially overcomes the weighted end, and the disk descends, partially opening the air valves in the smoke pipe, admitting a current of cold air, which serves to reduce the *force* of the draft in like proportion. Any further increase in the volume of heat passing into the smoke pipe will likewise increase the steam pressure, forcing a *greater* weight of water into the receivers, and opening the air valves *wider*, and reducing the force of the draft to its lowest point necessary for combustion.

As soon as the fire is checked and the smoke pipe cools, the water gradually returns to the boiler, reversing the action.

Inches,	5	6	7	8
Each,	$7 50	8 00	9 00	10 00

IMPROVED PRESSURE REGULATOR.

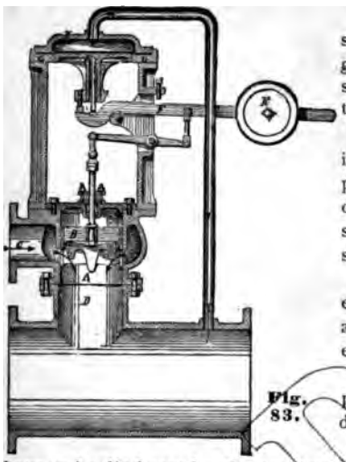


Fig. 83.

This apparatus is designed to regulate the pressure of steam, air or other gases, or fluids in their flow from the generator or from one vessel to another, wherever it is desirable to maintain a certain continuous lower pressure in the tanks.

It may therefore be employed to great advantage in boiling or distilling with steam at a constant pressure or temperature, as is desirable in boiling sugar or glue, or distilling oils, etc. Also in heating with steam generally at any desired constant temperature, such as in drying rooms, houses, shops, railroad cars, etc.

It may also be employed in regulating the motion of engines where the pressure of steam is subject to variations, as this Regulator when applied to an engine may be adjusted so as to supply it with any desired constant pressure.

Also, wherever it is necessary or desirable to highly compress gases or steam into tanks, from which they have to be discharged afterward at a comparatively low uniform pressure.

Also, when fluids of high or variable pressure or height have to be discharged with comparatively slow uniform speed.

It may also be applied as automatical governor for air-compressors, worked by a steam engine, or of steam pumps generally, and for numerous other purposes.

From the following description of the apparatus, its manifold application may be easily understood.

The sleeve B within the valve-chest A constitutes a balance throttle valve; C being the inlet of the gases or fluids and D the outlet. The inlet C is always connected with the boiler or receiver in which the higher or variable pressure exists, and the outlet D is connected with the pipes or the receiver, within which the lower or constant pressure has to be maintained.

This throttle valve is, by means of compound levers, as easily understood from the drawing, connected to the disk E, which rests with a steel pin on the lever F, and moves freely within the top-flange G. An india-rubber diaphragm which is inserted between the flange G and the cap H lies loosely on the disk E. There is finally an open communication with the upper side of the diaphragm and the valves D, by the pipe J.

The apparatus is ready for operation when the weight K is located on its lever so as to counterbalance the disk E, when acted upon by the desired constant pressure.

The operation is now the following:

As soon as the communication with the boiler or high-pressure tank is opened and the pressure on the outlet D has accumulated to the desired amount, the disk E is forced downward, which motion closes, by means of the levers and the sleeve B, the inlet very quickly, interrupting the flow from the boiler, which will only open again as the pressure at the outlet decreases somewhat below the desired constant amount, as the disk E will then be forced upward by the weight K; thus the pressure in the outlet D will be kept constant.

Each, $175 and $250.

BACK PRESSURE REGULATOR.

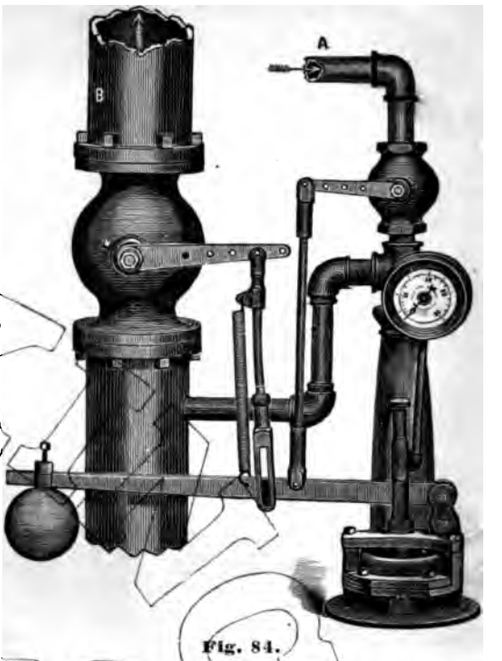


Fig. 84.

This Regulator is for controlling steam in heating-pipe where exhaust from an engine is used. Its operation is such as to keep the back pressure on the engine uniform, at any pressure that may be desired. B represents the exhaust to the air to let off an over-pressure. A is a pipe for letting in live steam, so as to keep the temperature and pressure uniform in the heating-pipes when the engine is not running or the exhaust is insufficient. The Regulator is arranged to control the live steam as well as the exhaust.

2 inch	$100 00	4 inch	$200 00
2½ "	125 00	6 "	250 00
3 "	150 00	8 "	
10 inch	$		

B. FITTS' STEAM PRESSURE REGULATOR.

Fig. 85.

These machines are for reducing the pressure of the steam used in Dressing-Rooms, Dye-Houses, Slashers, Bleacheries, and on Paper Machines, Heating Coils, etc., to any desired point below the pressure of the steam in the generating boiler, and also serve, when once adjusted, the further desirable and more important purpose of sustaining that pressure at a uniform point.

¾ inch	$50 00	2 inch	$85 00
1 "	55 00	2½ "	100 00
1¼ "	60 00	3 "	125 00
1½ "	75 00	4 "	150 00
6 inch	$200 00		

WATER PRESSURE REGULATOR.

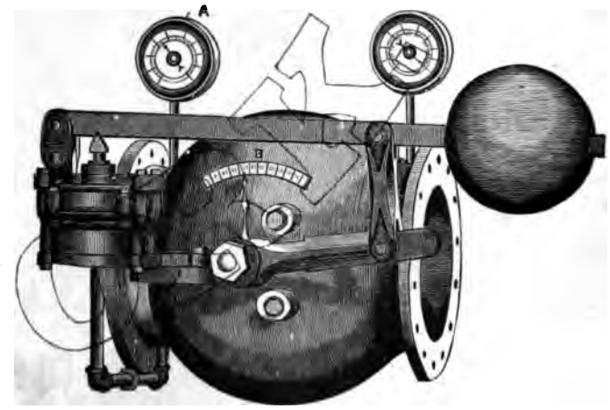


Fig. 86.

This is an apparatus for reducing and regulating the pressure in any system of water-works between what may be termed a high and low service.

This valve is serviceable wherever the head wants to be broken, either on a line of pipe or between a system of pipes.

10 in. with full attach'ts of gauges, index, and telegraph alarm,	$500
8 " " " " " " "	400
6 " " " " " " "	250

WATER PRESSURE REGULATOR FOR SERVICE PIPES.

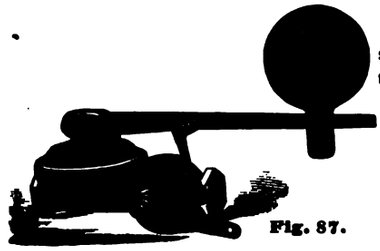


Fig. 87.

This can be adapted to reducing the pressure on the pipes to any desired point below that on the main.

½ inch	$15 00
¾ "	25 00
1 "	35 00
1½ "	60 00
2 "	85 00

JUDSON PATENT IMPROVED GOVERNORS.—See Figs. 88, 89, and 90.

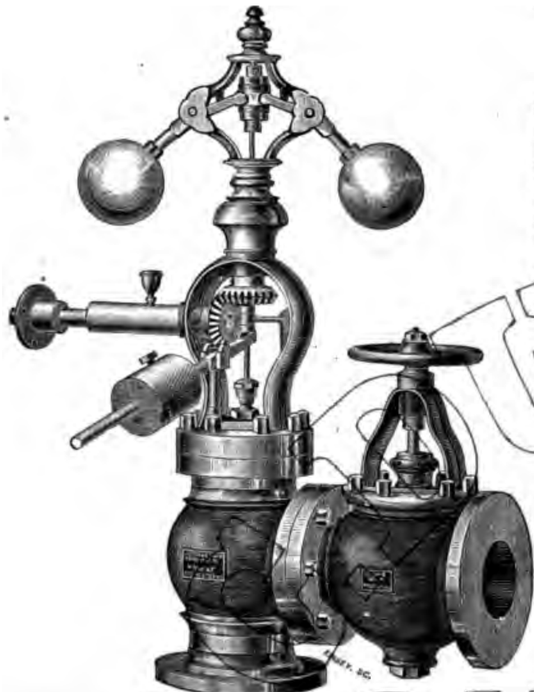


Fig. 88.

When Governors are ordered, be particular and say, Governor with Stop Valve, or without Stop Valve; and either Plain or Bright Finish, as you may require, and with or without Lever Attachment. Exact speed of each Governor is marked on the top head. See column of Speeds in Price-List.

Capacity of Valve or Diameter of Steam Pipe, in inches.	PRICE. Plain.	Bright Finish.	Lever Attachment, for altering speed.	Improved Stop Valve.	Size of Valve to Diameter of Engine Cylinder at ordinary speed of Piston (300 ft. per minute). For greater speed use larger Governors.	Diameter of Base Flange, in inches.	Diameter of Side Flange, in inches.	Distance from Base Flange to Centre of Steam Pipe, in inches.	Distance from Centre of Governor to end of Pulley Shaft, in inches.	Extreme height, inches.	Distance from Base Flange to Centre of Pulley Shaft, in inches.	Distance from Centre of Governor Valve to Stop Valve, in inches.	Speed of Governor. Number of Revolutions per minute.	Greatest Expansion of Balls, in inches.	Diameter and Face of Pulley that should be put on each Governor to drive it properly, in inches.
½	$17 00	$19 00	$1 90		1 to 2½	Scrwd.	Screwed for Steam Pipe.	2	7	10¾	5⅜	1⅝	320	8¾	3 × 1
¾	19 00	21 00	1 90		2¼ to 3½	3½		3	7	12	6⅝	2	320	9¾	3 × 1¼
1	21 00	24 00	2 00	$5 00	4 to 5	4½		2⅞	7½	13⅜	7⅝	2⅛	160	10	3½ × 1¼
1¼	25 00	28 00	2 25	6 00	5 to 6	5		3	10¼	18¼	8¾	2½	130	12½	4 × 1¼
1½	29 00	33 00	2 50	8 00	6 to 7	5¾		3⅜	11¾	20½	10¼	3	120	13½	4 × 1½
2	35 00	40 00	2 75	10 00	7 to 8	6½		4	12½	23¾	12⅞	3	120	14	4½ × 1½
2¼	42 00	48 00	3 25	14 00	8 to 9	7½	6½	4¾	13¾	27	14	4¾	110	17¾	5 × 2
2½	45 00	51 00	3 50	15 00	9 to 10	7½	Scrwd.	4¾	14¼	28¼	14¼	4	105	18¾	5½ × 2
2¾	49 00	56 00	3 75	17 00	10 to 11	8½	7	5⅛	14¼	29	15¼	5⅝	105	18¾	6 × 2
3	55 00	63 00	4 25	20 00	11 to 12	9	8	5¾	15½	33	17½	6	98	20¼	7 × 2
3½	64 00	73 00	4 50	25 00	12 to 14	10	9	6½	17	35¾	19¼	6½	98	22½	8 × 2
4	74 00	84 00	5 00	30 00	14 to 16	11	10	7¼	18½	38½	20½	7	95	26	9 × 2½
4½	86 00	97 00	5 50	36 00	16 to 18	11½	10½	7½	21	42½	22¼	7	92	28½	10 × 2½
5	94 00	106 00	6 00	42 00	18 to 20	12	11	7¾	21	43	22¾	7¼	92	28½	11 × 3
5½	112 00	125 00	6 50	48 00	20 to 23	13	12	8½	22	48½	24½	8	85	32½	12 × 3
6	125 00	138 00	7 00	54 00	23 to 26	14	13	9¼	23	50⅜	26⅜	8¼	77	35½	14 × 3½
7	150 00	165 00	8 00	68 00	26 to 28	15½	14½	9½	23	51⅜	27⅜	9	77	36	14 × 3½
8	185 00	202 00	9 00	80 00	28 to 30	17	16	10⅛	24	56	30	10	70	38	16 × 4
9	205 00	225 00	10 00		30 to 32	18	17	11¾	26	59½	33⅜	11	70	41 00	18 × 4½

Fig. 89.

HUNTOON GOVERNOR,

FOR STATIONARY AND MARINE ENGINES.

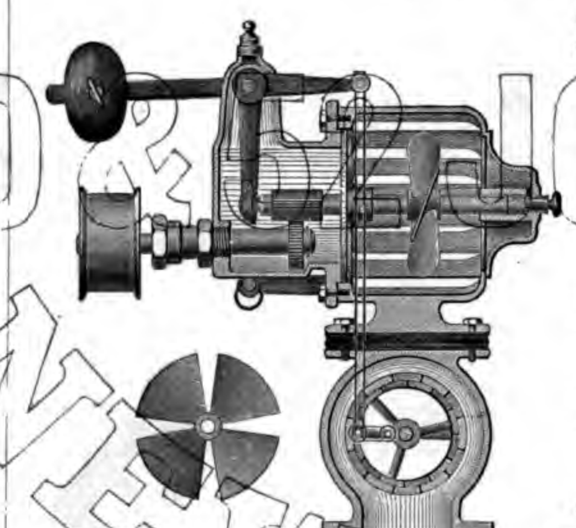


Fig. 91.

Size of Valve.	Size of Flange	Speed.	Price.	Adapted to Engines with Cylinder's Diameter.
¾ inch.	Nipple.	Speed for each size numbered on end of Pulley Shaft.	$65 00	3 inch.
1 "	"		80 00	4 to 5 "
1¼ "	"		90 00	5 to 6 "
1½ "	"		100 00	7 to 8 "
2 "	"		112 00	9 to 10 "
2½ "	"		125 00	11 to 12 "
3 "	"		137 00	14 to 15 "
3½ "	10 inch.		150 00	16 to 18 "
4 "	11 "		165 00	18 to 22 "
4½ "	11 "		180 00	22 to 24 "
5 "	12 "		200 00	26 to 28 "
6 "	14 "		250 00	28 to 30 "
7 "	15 "		300 00	32 to 36 "
8 "	To order.			
9 "	"			
10 "	"			

Stop Motion or Safety Attachment, $15 00 additional.

Fig. 90.

TURNED FLANGED GOVERNOR PULLEYS.

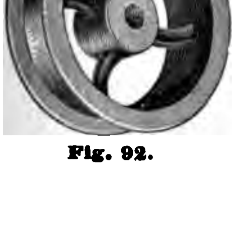


Fig. 92.

Diameter, ins.,	2½	2¾	3	3	3	3½	3½	3½	4	4	4	4	4½	4½	4½	4½	5	5	5	5½	5½	5½	6	6	6
Width of Face, inches,	1¼	1¼	1	1¼	1½	1	1¼	1½	1	1¼	1½	2	1	1¼	1½	2	1	1¼	2	1	1¼	2	1¼	2	2½
Net Price..	$0 60	0 60	0 60	0 70	0 70	0 70	0 70	0 80	0 80	0 80	0 90	1 00	1 00	1 00	1 00	1 10	1 10	1 10	1 20	1 20	1 20	1 30	1 30	1 40	1 50

Diameter, ins.,	6½	6½	6½	7	7	7	7½	7½	8	8	8½	8½	9	9	9½	9½	10	10	10½	11	11½	12	14	16	18
Width of Face, inches,	1¼	2	2½	1¼	2	2½	2	2½	2	2½	2	2½	2	2½	2	2½	2	2½	2½	3	3	3	3½	4	4½
Net Price....	$1 50	1 60	1 70	1 70	1 80	1 90	1 90	2 00	2 00	2 10	2 10	2 20	2 20	2 30	2 30	2 40	2 50	2 60	2 80	3 00	3 20	3 40	4 00	5 00	6 00

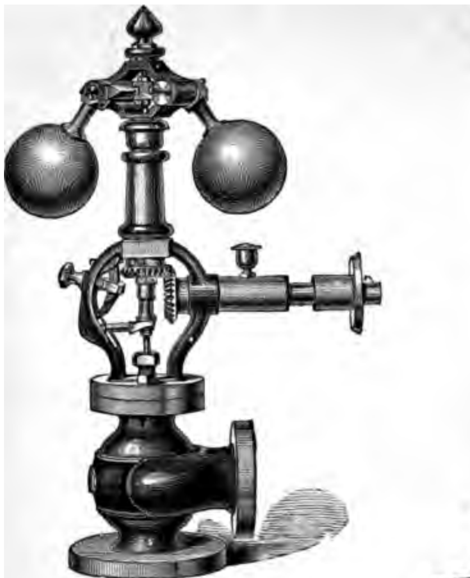


Fig. 93.

WATERS'
ENGINE GOVERNOR.

THE SHIVE STEAM ENGINE GOVERNOR.

SIZE. Diameter of Steam Pipe.	BLACK.	FINISHED.	EXTRA FOR Ball and Lever.	Speeder.	Automatic Safety Check.	Stop Valve.	SIZE. Diameter of Steam Pipe.	Diameter of Base Flange.	Diameter of Side Flange.	Base Flange to Centre of Steam Pipe.	Centre of Governor to Side Flange.	Centre of Governor to End of Shaft.	Base Flange to Centre of Shaft.	Extreme Height.	Greatest Spread of Balls.	Average Revolutions per Minute.
inches							ins.	ins.	ins.	ins.	ins.	ins.	ins.	ins.	ins.	
¾	$28 00	$30 00	$3 00	$3 75		$3 75	¾			1¾	2	8½	6	13½	10	150
1	33 00	36 00	3 00	3 75		5 00	1	4		2½	2¾	9½	7⅜	16½	11	100
1¼	40 00	43 00	3 25	4 00		5 75	1¼	4¾	3½	2⅝	3¼	10½	8⅝	18½	12	100
1½	45 00	50 00	3 50	4 50	$8 00	7 50	1½	6	4¼	3⅛	4	11½	10½	22	14	100
2	57 00	62 00	4 00	5 00	9 00	11 00	2	7	5¼	3⅞	4½	12½	12	24½	15	90
2½	70 00	76 00	4 75	5 75	10 00	17 00	2½	7¾	6½	4¼	5½	13½	12⅜	26½	17¼	90
3	83 00	90 00	5 50	6 50	11 00	23 50	3	9	7⅝	5⅛	6½	15	15⅜	30½	19¼	80
3½	96 00	104 00	6 25	7 25	12 50	30 00	3½	9½	7⅞	5¼	6¾	15	16	32	20	80
4	109 00	118 00	7 25	8 25	14 50	37 00	4	10	8½	6	7½	17	18	36	23	76
4½	120 00	132 00	8 00	9 00	16 00	42 00	4½	10½	9⅜	6⅜	8	17	20	38	23½	76
5	136 00	150 00	8 75	10 00	17 50	53 00	5	12	10	7¼	8¾	21½	21¾	42½	25	70
6	173 00	185 00	9 50	12 00	19 00	69 50	6	13½	11	7¾	10⅛	25	23½	47	27	65
7	230 00	255 00	12 00	14 00	22 50	92 50	7	15	13	8⅝	11¼	30	25½	50	29	60
8	255 00	275 00	13 00	15 00	25 00	115 00	8	16	15	9¾	12¾	33	30	55	31	55

Fig. 94.

PRICE-LIST AND TABLE OF DISTANCES.

Size of Valve, or Diameter of Steam Pipe.	BLACK.	FINISHED.	Diameter of Cylinder suitable for.	Extreme Height	Diameter of Space required.	Dis'ce from Base Flange to Centre of Steam Pipe.	Distance from Centre of Governor to Stop Valve	Dis. from Centre of Gover'r to end of Pulley Shaft.	Diameter of Base Flange	Diameter of Stop Valve Flange.	Speed of Gov'r. Rev. per minute.
ins.			inches.	ins.	ins.	ins.	ins.	ins.	ins.		
¾	$19 00	$26 00	3 to 4	13½	9	2¾	2¼	8½	4 (Screw or Flange.)	Scrwd. for St'm Pipe.	280
1	21 00	28 00	4 to 5	14	9	3	2⅜	8½	4½		280
1¼	25 00	33 00	5 to 6	16	10	3½	2½	9½	5		260
1½	30 00	39 00	6 to 7	19	14	3¼	2¾	10½	6		225
2	35 00	45 00	7 to 8	21	18	4	3	13½	7	ins.	210
2½	45 00	56 00	8 to 10	24	18	4⅝	4⅜	14	8	6½	210
3	60 00	75 00	10 to 12	28	22	5¾	5½	16	9	7	180
3½	72 00	88 00	12 to 14	30	22	6	6	19	10	8	180
4	85 00	105 00	14 to 16	34	25	6⅜	6¼	20	11	8½	160
4½	95 00	115 00	16 to 18	36	25	7	6¾	21	12	9½	160
5	106 00	130 00	18 to 20	38	25	8½	7½	22	13	10½	160
6	140 00	165 00	24 to 28	42	34	9¾	8¼	23	14	12	150
7	170 00	195 00	28 to 32	44	34	11	10	24	15	13	150
8	210 00	240 00	32 to 36	50	40	12	11	26	16	14	125
9	250 00	290 00	36 to 40	52	40	13	12	28	18	15	125
10	350 00	400 00	40 to 44	66	48	14	13¼	30	20	16	100

PICKERING
GOVERNOR.

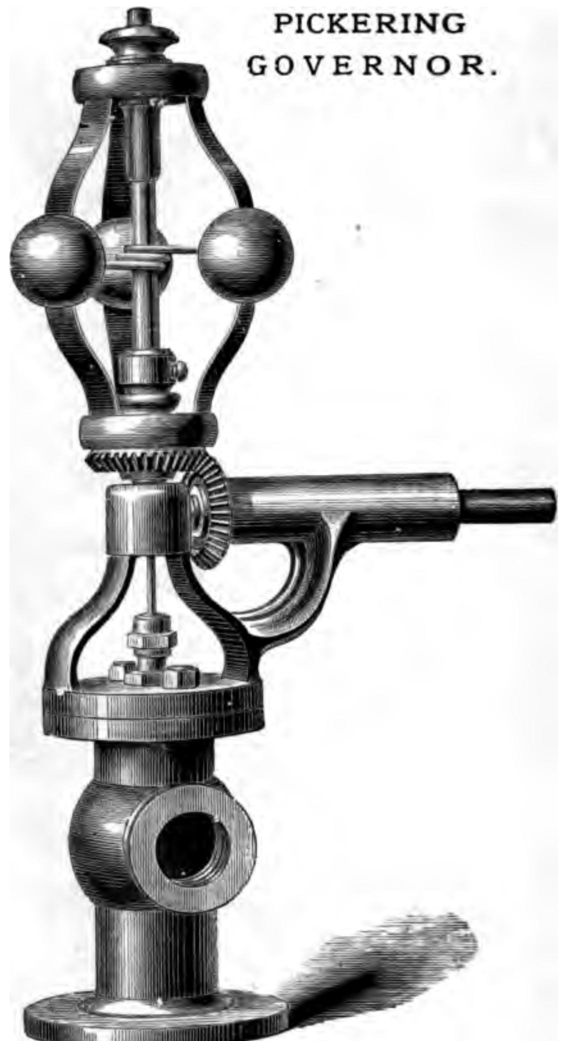


Fig. 95.

SIZE.	Finished.	Plain.	Portable.	Height.	Speed Adjuster.	Speed Adjuster and Stop Motion.
inches.				inches.		
½	$20 00	$18 00	$18 00	12½		
¾	21 00	19 00	18 00	14		
1	24 00	21 00	20 00	18¼	$2 00	$6 50
1¼	27 00	24 00	23 00	20	2 50	7 00
1½	33 00	29 00	28 00	24¼	2 50	8 00
2	39 00	34 00	33 00	27½	3 00	9 00
2½	52 00	46 00		31	3 50	10 00
3	63 00	55 00		36¾	4 25	12 00
3½	72 00	63 00		38½	4 50	13 00
4	84 00	74 00		43	5 00	15 00
5	105 00	93 00		48	6 00	16 00
6	137 00	124 00		52	7 00	17 00
7	165 00	150 00		54	8 00	19 00
8	200 00	184 00		56	9 00	21 00

GIFFARD'S INJECTOR FOR FEEDING BOILERS.

SELLER'S IMPROVEMENT, SIMPLE, EFFECTIVE.

The efficiency of these instruments has been thoroughly tested by their extended use in this country for the past fourteen years. NEARLY TWENTY THOUSAND NOW IN USE.

THE PATENT SELF-ADJUSTING INJECTOR.

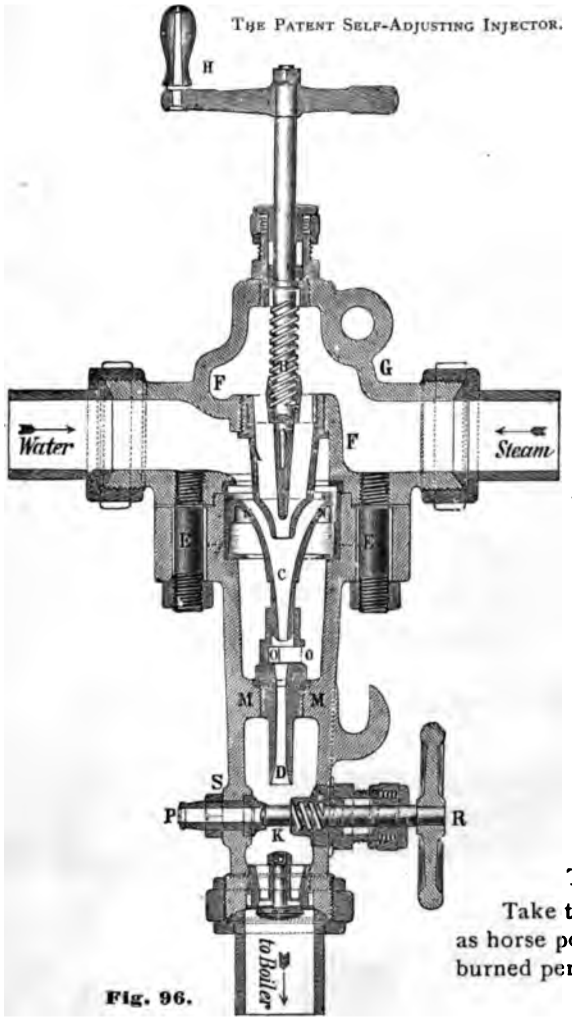


Fig. 96.

THE SELF-ADJUSTING INJECTOR,

Applicable in all cases where a great or sudden variation of steam may occur, and where a great range in the quantity of delivery is required—as for Locomotives.

They lift the water or take it under pressure; when the pressure, however, exceeds ten feet head, one of the water-regulating valves should be used.

THE SELF-ADJUSTING INJECTOR, WITHOUT STEAM SPINDLE,

Applicable in cases where there is great or sudden variation of steam, and great range in the quantity of delivery, and where water flows to injector. Should not be applied where the water is to be lifted.

THE ADJUSTABLE INJECTOR,

Applicable where no sudden variation of steam occurs, but where range in the quantity of delivery is desirable, as in many cases, for stationary boilers.

THE ADJUSTABLE INJECTOR, WITHOUT STEAM SPINDLE,

Where no great range in quantity of delivery is desired, and where the water flows to injector under pressure.

THE PATENT ADJUSTABLE INJECTOR.

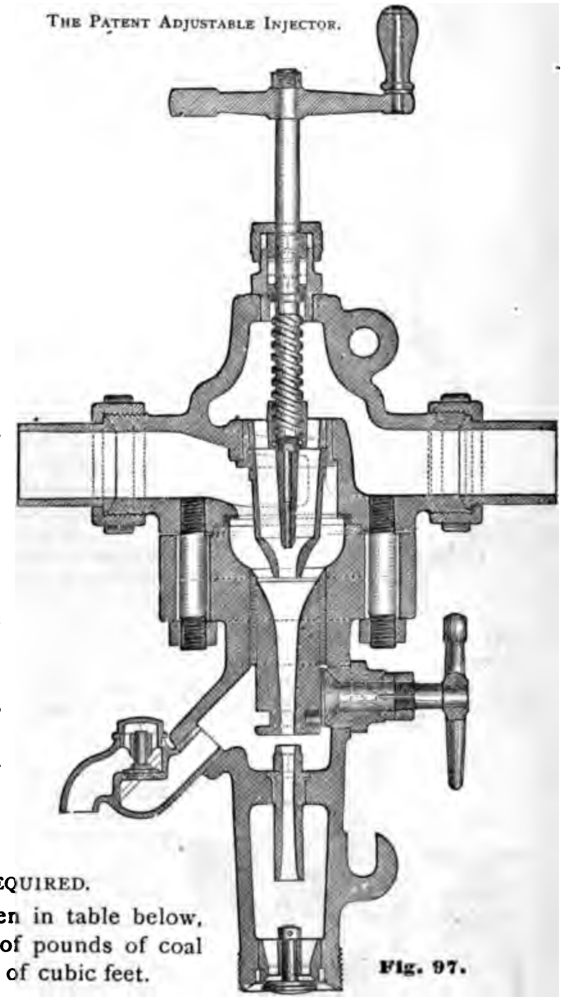


Fig. 97.

TO DETERMINE SIZE OF INJECTOR REQUIRED.

Take the number of cubic feet of water given in table below, as horse power ot boiler, or divide the numbers of pounds of coal burned per hour by 7½, which gives the number of cubic feet.

PRICE-LISTS AND TABLES OF CAPACITIES.

THE PATENT SELF-ADJUSTING INJECTOR.

Size No.	With Steam Spindle. Brass Body Polish.	With Steam Spindle. Iron Body.	Without Steam Spindle. Brass Body Polish.	Without Steam Spindle. Iron Body.	Size of Connections.	Pressure of Steam 15	30	45	60	80	100	120
						Cubic Feet of Water per Hour, or Horse Power of Boiler.						
2	$22	$18	$19	$15	½	8	9	10	11	12	14	15
3	30	25	27	22	¾	19	22	24	27	30	33	37
4	42	35	39	32	1	35	40	45	50	56	62	68
5	55	45	51	41	1¼	57	64	71	78	87	97	106
6	70	55	65	50	1¼	83	93	103	113	126	140	154
7	85	65	80	60	1½	113	127	141	155	173	191	210
8	100	75	94	69	2	148	166	184	203	227	251	275
9	115	85	108	78	2	188	210	233	256	287	318	349
10	130	95	122	87	2	232	260	288	317	355	393	431
12	150	115	140	105	2½	334	375	416	457	512	566	620

THE PATENT ADJUSTABLE INJECTOR.

Size No.	With Steam Spindle. Brass Body Finish.	With Steam Spindle. Iron Body.	Without Steam Spindle. Brass Body Finish.	Without Steam Spindle. Iron Body.	Size of Connections.	Pressure of Steam 15	30	45	60	80	100	120
						Cubic Feet of Water per Hour, or Horse Power of Boiler.						
2	$22	$18	$19	$15	½	7	8	9	10	11	12	13
3	30	25	27	22	¾	17	19	21	24	27	29	33
4	42	35	39	32	1	31	36	40	44	49	56	60
5	55	45	51	41	1¼	50	56	62	70	77	85	93
6	70	55	65	50	1¼	73	81	90	99	110	122	134
7	85	65	80	60	1½	99	101	123	135	151	167	194
8	100	75	94	69	2	130	146	161	177	199	220	241
9	115	85	108	78	2	165	284	204	223	251	278	306
10	130	95	122	87	2	203	227	252	277	311	344	377
12	150	115	140	105	2½	292	328	364	400	448	496	544

PRICES OF STATIONARY ATTACHMENTS.

THE SELF-ADJUSTING INJECTOR.

Size of Injector. Nos.	2	3	4	5 & 6	7	8, 9 & 10	12
Starting Valve	$5 00	$6 00	$7 00	$8 75	$10 50	$13 50	$20 00
Regulating Valve	3 00	3 50	4 00	5 00	6 00	9 00	14 00
Alarm Check Valve	1 10	1 10	1 10	1 25	1 25	1 25	1 25
Drip Pan for Waste Pipe	35	35	35	62	75	90	1 25
Attachments complete, with connections to Injector	10 00	11 50	13 25	16 75	20 00	27 25	39 00

THE ADJUSTABLE INJECTOR.

Size of Injector. Nos.	2	3	4	5 & 6	7	8, 9 & 10	12
Starting Valve	$5 00	$6 00	$7 00	$8 75	$10 50	$13 50	$20 00
Stop Valve	1 80	2 40	3 30	4 20	5 52	7 80	14 40
Main Check on Boiler	1 08	1 32	1 80	2 40	3 12	4 80	
Attachment complete	7 88	9 72	12 10	15 35	19 14	26 10	

PRICES OF LOCOMOTIVE ATTACHMENTS.

Size of Injector. Nos.	3	4	5	6	7	8
Start'g Valve, without flange, polish'd	$7 50	$8 50	$11 50	$11 50	$13 50	$18 00
" " " " plain	7 00	8 00	10 50	10 50	12 75	16 00
Dry Pipe Coupl'g for Start'g Valve, A	1 50	1 50	1 50	1 50	1 50	1 50
Starting Valve, with flange, polished	8 00	10 50	13 75	13 75	17 00	20 00
" " " " plain	7 50	9 75	13 00	13 00	15 50	18 00
Main Check Ingress at Bot., without flange, Pol'd	5 50	7 00	8 75	8 75	10 50	13 75
" " " with " "	6 75	9 25	10 00	10 00	13 00	16 00
" " horizontal, without " " / " " inclined, " "	5 50	7 00	8 75	8 75	10 50	13 75
" " horizontal, with " "	6 75	9 25	10 00	10 00	13 00	16 00
Water and Alarm Check Valve	3 00	3 50	4 00	4 00	4 50	5 25

Extension Rod, $3 00. Extension Rod, with Universal Joint, $6 00. Extra Fitting for Overflow Valve, for heating, $2 75.

CLASS A.—NON-LIFTING, FOR LOCOMOTIVES.

FRIEDMANN

PATENT INJECTORS,

FOR FEEDING BOILERS.

CLASS B.—LIFTING, FOR LOCOMOTIVES.

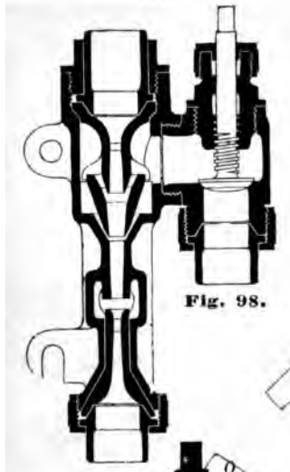
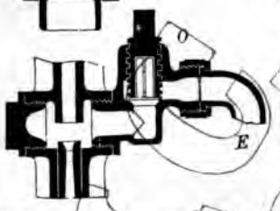


Fig. 98.



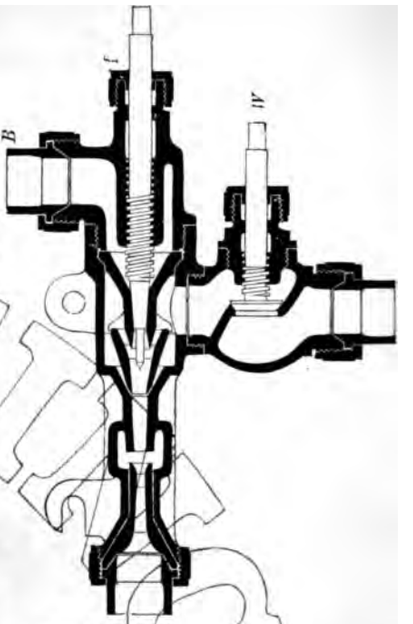


Fig. 100.

These Injectors are well known and extensively used all over the continent of Europe and in England for feeding Locomotive, Stationary, and Marine Boilers, and have been adopted by all the principal Railroads of these countries, over twelve thousand of them being now in use.

We have made some little change in their exterior model, to correspond with American ideas of taste, and we now present an Injector second to none in external appearance, and equaled by none in working power and capacity.

Among the advantages possessed by these Injectors are the following:

They start promptly, even with less than five pounds pressure on the boiler, and as high as two hundred pounds.

Do not lower the boiler pressure when feeding.

Feed warm water at high and low pressure.

Deliver more water, with less steam, than any others.

Have no movable parts to get out of order.

A valve in the overflow prevents the admission of air into the boiler.

The tender water can be heated through it without separate cocks or pipes, etc.

No special skill required to operate them.

These superior advantages are chiefly owing to the admirable internal construction of these Injectors, as shown in the sectional plates, and to which we direct special attention.

Foremost among these distinguishing interior arrangements is the *intermediate Nozzle*, by which the water is supplied to the steam jet in two annular streams. By this means the momentum of the steam, instead of being checked by contact with a large mass of water, is imparted first to one stream and then to the other, thus making the steam jet more effective than it would otherwise be. Another advantage of the intermediate nozzle is, that the overflow from the first or upper annular orifice flows down into the second one, so that the water supply is regulated, and adjusts itself to the steam jet.

The chief defect of injectors generally is the difficulty in feeding the boiler with a steady stream of water, on account of the steam jet being only partially condensed, where there is but one water-way. This causes it to expand again after it has left the injecting nozzle, and thus breaks the water jet, interfering materially with the duty of an injector.

This difficulty is entirely obviated in the Injector of our make, by the double water-way before mentioned. The steam jet, being subjected alternately to the action of two streams of water at two distinct points, becomes thoroughly and effectually condensed, and by its imparted force carries the water in a steady, unbroken stream into the boiler.

By this arrangement, also, the first stream becomes a motor of the second, and carries it along without using more steam than is required to drive the first. Hence the superior economy of the intermediate nozzle in the use of steam.

These Injectors start as promptly and work as well with steam of a high pressure as with that of a low pressure, and deliver more water with the same consumption of steam than injectors with movable nozzles, or other contrivances, that are constantly getting out of order, besides being more simple and easily manipulated. The intermediate nozzle of these Injectors being fixed and stationary, they are not liable to wear or need repairs.

These Injectors are NON-LIFTING and LIFTING, and divided into several classes, as hereafter described.

The NON-LIFTING LOCOMOTIVE INJECTOR, which is placed below the water-line, can be used as a heating cock for the tender or water tank, by closing the overflow valve. The ordinary heating cocks are thus done away with, and that expense spared. The water in the tank, by this means, can be heated up to one hundred and twenty degrees, without giving any trouble in working or starting the Injector.

The LIFTING INJECTORS are applied only when water to feed boilers is taken from Rivers, Ponds, Low Reservoirs, Wells, Buckets, etc., where there is no head of water, and will raise water, according to steam pressure, from six to eighteen feet.

CLASS D.—LIFTING INJECTORS FOR PORTABLE AND STATIONARY BOILERS.

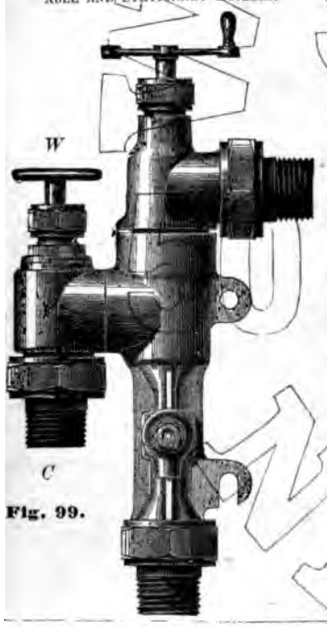


Fig. 99.

CLASS C.—NON-LIFTING INJECTORS, FOR STATIONARY BOILERS.

Fig. 101.

CAPACITY AND PRICE-LIST OF INJECTORS.

SIZE OF INJECTORS.	No.	2	3	4	5	6	7	8	9	10	12	14	16	18	20
CAPACITY. MINIMUM DELIVERY PER HOUR, IN GALLONS, AT.....	120 lbs. Steam Pressure,	90	220	390	630	870	1200	1560	1980	2450					
	80 " " "	80	180	320	500	720	965	1280	1620	2000	2880	3920	5120	6480	8000
	50 " " "	63	141	243	395	570	774	910	1380	1580	2275	3110	4046	5122	6323
	20 " " "	39	90	160	250	360	500	639	810	990	1440	1958	2500	3238	3995
Minimum Inside Diameter of Pipes, in inches.....		½	¾	1	1¼	1¼	1½	1½	2	2	2½	2½	3	3	3½
PRICE-LIST. Price of Non-Lifting Injector, in best gun metal, complete, Class C.....		$21	$35	$50	$65	$75	$90	$110	$130	$160					
Price of Lifting Injector, in best gun metal, complete, Class D.....		25	42	60	70	85	100	120	140	180					

TO DETERMINE SIZE OF INJECTOR REQUIRED.

One nominal horse power, per hour, will generally require 7½ gallons of water per hour. In case of plain cylinder boilers, divide the number of square feet of heating surface by 10 for the horse power. In case of flue boilers, divide by 12, and with multitubular boilers divide by 15 for the nominal horse power.

Care should be taken, in ordering, to state whether the Injectors wanted are NON-LIFTING *or* LIFTING—*for High or Low Pressure.*

MACK'S PATENT INJECTORS OR BOILER FEEDERS.

FOR LOCOMOTIVE AND STATIONARY BOILERS.

ALL BRASS.

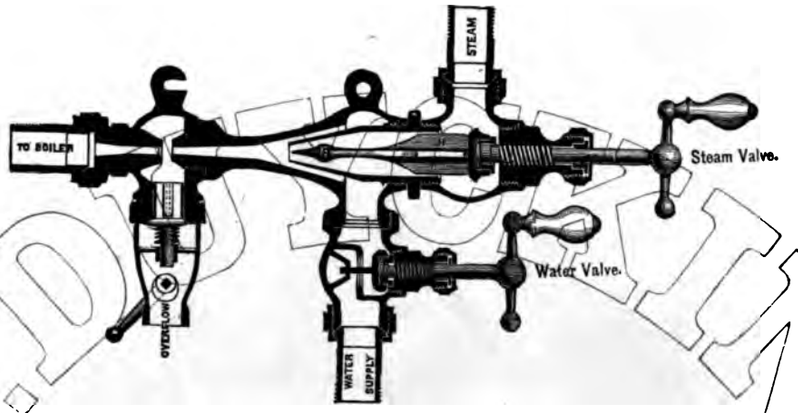


Fig. 102.

This is a fixed nozzled Injector, free from all the objections attached to an automatic or other adjustable Injectors. It has a working range with *one handle*, from 15 lbs. to 175 lbs. steam pressure on a locomotive. It is always reliable, whether worked constantly or once *in a year*.

When extraordinarily high pressure is required, we attach a valve of our own patent, which will admit of working this Injector at a range of 5 lbs. to 250 lbs. steam pressure.

This Injector is simple in its construction, perfectly reliable, and requires no skill to operate it.

If attached where a head of water can be obtained, it is applied in its simplest form, as any ordinary valve, or cock, on steam and water, are all that is required to regulate it.

Where it is necessary to draw the water, as on Locomotive Engines, we apply a valve, so constructed as to draw the feed-water and discharge it to the boiler almost instantaneously, thereby obviating one of the great difficulties felt in operating boiler-feeders of this class.

There is, likewise, no possibility of overheating the instrument and destroying its action, because the water is elevated as soon as the valve is opened, and will continue so until the valve is drawn out to admit steam sufficient to impel it to the boiler.

It requires no manipulation to regulate it, however much the steam may vary, and being operated (on the Locomotive) with only one (steam) valve to start and stop, when required, we feel confident that it must recommend itself to Railroad Engineers, as one of the simplest feeders ever brought before them.

1st. It is so simple in its construction, that it presents no difficulties in case of repairs.

2d. It is perfectly reliable, and requires no skill to operate it.

3d. On Locomotives only one valve is required to start or stop it.

4th. It is, also, immaterial whether it is placed inside or outside of the cab, as it will work in any position, or through any ordinary amount of turns necessary.

5th. It is continuous in its action, should the steam be 20 or 150 lbs.

6th. On ordinary boilers it will act when attached to the city main, however much the pressure varies.

7th. It can be attached to propel the feed through a heater, thereby elevating the temperature to the boiling point.

This Injector feeds the boiler constantly, and continually, without ceasing, while the Locomotive is standing or in motion, and the *stream of water will not break* when the engine is passing over the roughest of roads, and it will also work while *hot*.

Size	A	1	2	3	4	5	6	7	8	9	10	12
Price	$18 00	20 00	22 00	30 00	42 00	55 00	70 00	85 00	100 00	115 00	130 00	150 00
Connections	¼ in.	⅜ in.	½ in.	¾ in.	1 in.	1¼ in.	1¼ in.	1½ in.	1½ in.	2 in.	2 in.	2½ in.
Nom'l H. P. at from 30 to 80 lbs.,	7	10	20	40	50	75	100	150	200	250	300	375
Lift of Water at Steam { of 15 lbs.,	9 in.	18 in.	2 ft.	3 ft.	3½ ft.	4 ft.	5 ft.	6 ft.				
Pressure { of 40 "	20 in.	36 in.	4 ft.	6 ft.	8 ft.	12 ft.	18 ft.	25 ft.				

C.D. PECK INC. SUPPLIES YOUR SUPPLY NEEDS

RUE'S LITTLE GIANT INJECTOR.

Made wholly of Brass. Will not rust. Simple in construction, easy of adjustment, reliable. Can be made to work equally well under high or low pressures of steam.

A. Are for stationary and other Boilers where the water is supplied from a tank, or pipes, where there is a head or pressure of water.

B. Are for Locomotive and other Boilers where the water must be lifted. A separate steam pipe is applied to the lifting attachment at P.

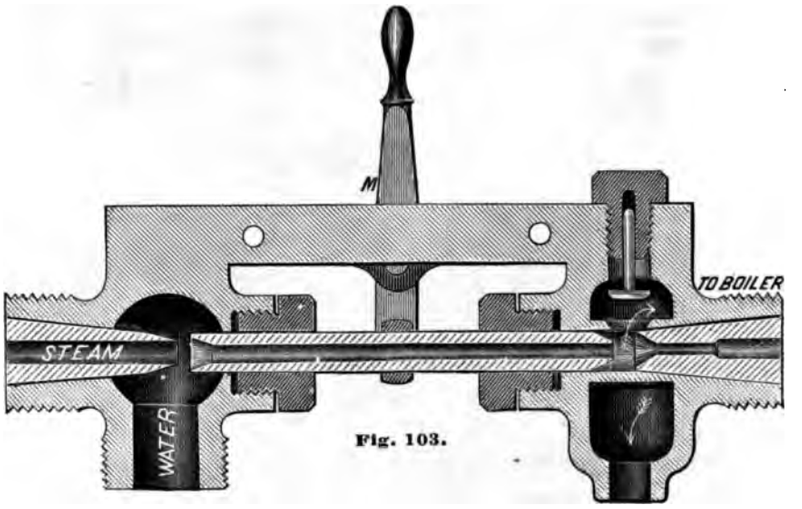


Fig. 103.

This Injector, made under the Patents of SAMUEL RUE, Jr., has been thoroughly tested, and has proven its superiority over all others in the following points:

1. SIMPLICITY, ease of adjustment and durability; it does not rust or wear.

2. It works under almost any pressure of steam or water, and can be worked either to its full or partial capacity; after starting it, an adjustment of the handle M regulates it.

3. RELIABILITY. It will work under almost any circumstances without breaking by jarring, roughness of roads, or variation of steam or water supply.

4. The great command over it, by means of the adjustable tube, will enable you to feed the boiler at lower pressure, and more economically than to run a pump.

5. When there is no steam pressure in the boiler, by closing the overflow, the water will flow through the Injector into the boiler, thus saving an extra feed pipe.

6. Being made wholly of brass, with but few movable parts and little wear, it is not likely to get out of order or need repairs, while but few extra fittings are necessary.

7. The water being heated to about 210° Fahrenheit, it can be put in at any part of the boiler; even in the side of the fire-box, saving much pipe, and not injuring the boiler.

8. It can be cleaned without taking apart by merely disconnecting it from the boiler; a wire run through it will remove any obstruction.

9. SAVING OF FUEL, ETC. Used as a feeder, with a pressure from a tank, it is simple in form, and the *whole of the heat of the steam* used to operate it is communicated to the water, and the water is put into the boiler much hotter than any heater will make it. Experience has shown a saving of fuel, oil, packing and repairs, as compared with a pump.

10. Where there is no head, and the water must be lifted, a small steam pipe is attached at P, and a steam jet thrown into the overflow pipe, causing a vacuum, by which all hot water or air is drawn out of the Injector, and the water lifted; it therefore goes to work promptly, without waiting to cool, or forcing you to work at it to get the *jet* to form a vacuum, as in other Injectors.

No.	0	2	3	4	5	6	7	8	9	10	12
Price	$15 00	30 00	45 00	55 00	70 00	85 00	100 00	120 00	140 00	190 00	240 00
Size of Pipe Connections	¼	½	¾	1	1¼	1¼	1½	2	2	2	2½
Pressure of Steam	90	90	90	90	90	90	90	90	90	90	90
Gals. of water delivered per hour,	60	120	300	600	900	1200	1620	2040	2480	3000	3600
Nominal horse-power	4 to 8	8-20	20-40	40-80	60-120	80-160	140-225	200-275	250-350	300-400	350-500

THE ECLIPSE INJECTOR.

PATENTED MARCH 7, 1876.

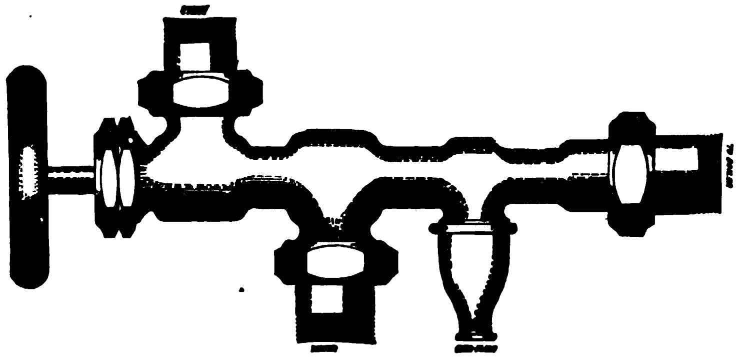


Fig. 104.

MADE WHOLLY OF BRASS. ALL JOINTS GROUND.

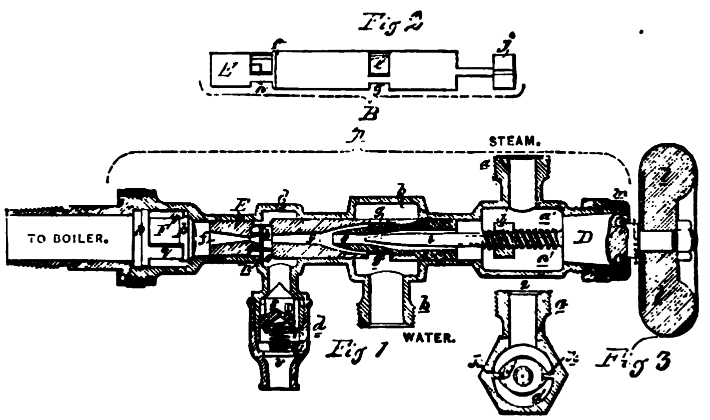


Fig. 105.

PRICE-LIST

Of the following sizes. If larger sizes are required, they must be specially ordered.

No.	A	1	2	3	4	5	6	7	8	9	10	12
Price............	$15	$18	$22	$35	$50	$60	$75	$90	$105	$125	$155	$190
Size of Pipe Con's	¼	⅜	½	¾	1	1¼	1¼	1½	2	2	2	2½
Nom'l H. P. at 70 lbs. Steam.		8	20	30	55	85	125	175	225	285	350	500
No. of Gal. per min.		¾	2	4	8	12	18	24	31	39	48	66

Purchasers of Injectors, if they desire it, can have the inside working parts in duplicate, thus giving them the advantage of two machines, at the following prices:

No.	A	1	2	3	4	5	6	7	8	9	10	12
Price...........	$5	$7	$10	$12	$15	$20	$23	$25	$27	$30	$40	$50

These Injectors are made entirely of brass, and are finished in the best manner. The Special Lifter at same prices as above.

Each Injector, as usually set up, requires the following

ATTACHMENTS,

which will be furnished at market prices, as below:

No.	1	2	3	4	5 and 6	7	8, 9 & 10	12
Size of Connections.	⅜ in.	½ in.	¾ in.	1 in.	1¼ in.	1½ in.	2 in.	2½ in.
(1) Steam Valve, (1) Water Cock, (1) Stop Valve.. Each.	$1 00	$1 35	$1 85	$2 60	$3 80	$5 25	$7 50	$13 25

Pipe Connections and Extra Fittings according to position of Injector.

In presenting this new and improved Injector to the public, we beg leave to call attention to a few points of superiority which, we claim, it has over all others.

1. Its simplicity, durability, and ease of adjustment; any one acquainted with steam can easily attach and work it.

2. It has but three working parts, which can be readily taken out, separated, examined, cleaned, and replaced, without breaking any of the connections.

3. It works under any pressure of steam, from five pounds upward. It is an impossibility to throw it off while working.

4. The regulator being once properly set and locked, it will work, without further adjustment, between five and one hundred pounds pressure, it being necessary only to turn on water and steam.

5. The water is heated to two hundred and ten degrees Fahrenheit by the use of this Injector; hence no heater is necessary, and can be dispensed with.

6. There is no loss of steam when feeding the boiler, as the steam is returned to it again with the hot water. It can be regulated to feed much or little, as may be required.

7. It is not necessary to run the engine to pump up; hence there is a saving of wear and tear of machinery, and consequently a saving of fuel.

8. It will lift water as high as any Injector in the market, and will take it warmer.

9. When necessary to refill the boiler with cold water after cleaning out, by closing the overflow and removing the working part, the water from tank or supply will flow through the Injector, the opening being the size of the connecting pipe.

10. For Locomotives it is particularly adapted, as by simply turning in the regulating valve tight, it then throws the steam into the tender or water tank, heating the water therein, and thus obviating all danger of freezing.

In stating the above points of superiority, we make some strong claims for the Eclipse Injector, and, asking a fair trial, will rely entirely on the merits of the machine as a guarantee of perfect satisfaction.

In every case where not found as represented, they will, if uninjured, be removed, and the payments refunded.

In ordering Injectors, state whether the water has to be lifted, and how high, or if to be taken from a tank or street main, as we make a Special Lifter, which will lift water much higher than any ordinary Injector. The Special Lifter requires no extra attachments, and is furnished at same prices. See Price-List.

TO DETERMINE THE SIZE OF INJECTOR REQUIRED.

One nominal horse power will generally require 7½ gallons of water per hour.—To determine the nominal horse power: in case of large or plain cylinder boilers, divide the number of square feet of heating surface by 10; for flue boilers, divide by 12; and with multi-tubular boilers, divide by 15.

KNOWLES
PATENT STEAM PUMP.

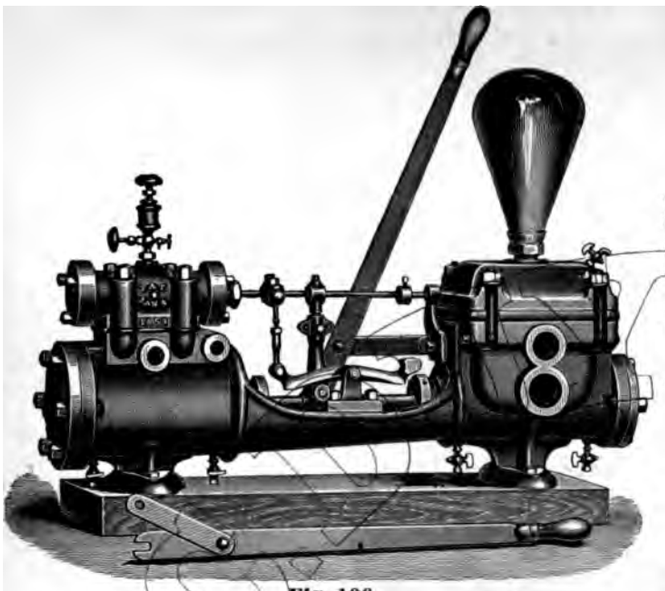


Fig. 106.

NOS. 3 AND 4.—SHOWING HAND POWER LEVER AND LEVER DETACHED.

PRICE-LIST OF REGULAR SIZES.

All these Pumps (except special orders) are made "long connected," thus obviating the great disadvantages of running the Piston Rod from the live steam into cold water, and consequent tearing away of Stuffing Boxes, loosening of Pistons etc. "Close Connected" Pumps only to order.

No.	Diam. of Steam Cyl. in inches.	Diam. of Water Cyl. in inches.	Lgth. of Stroke in inches.	Gallons per Stroke.	Strokes per Minute.	Size of Steam Supply Pipe.	Size of Steam Exhaust Pipe.	Size of Suction.	Size of Discharge.	PRICE.
1	3	2	4	.06	1 to 300	½	¾	1¼	— 1	$150 00
2	4	2½	6	.10	1 to 300	½	¾	1¼	— 1	200 00
3	5	3¼	7	.25	1 to 275	¾	1	2	— 1½	250 00
4	5½	3¾	7	.34	1 to 275	¾	1	2	— 1½	275 00
5	7	4½	10	.69	1 to 250	1	1¼	3	— 2½	375 00
6	7½	5	10	.85	1 to 250	1	1¼	3	— 2½	400 00
7	10	6	12	1.46	1 to 200	1¼	1½	4	2 — 3	475 00
8	12	7	12	1.99	1 to 200	2	2½	5	2 — 3½	550 00
9	14	8	12	2.61	1 to 200	2	2½	5	2 — 3½	600 00
10	16	10	16	5.43	1 to 200	2	2½	6	2 — 4	800 00
11	18	12	24	11.75	1 to 180	2½	3	8	— 6	Prices according to work required.
12	20	14	24	15.99	1 to 180	2½	3	10	— 8	
13	24	18	24	26.43	1 to 150	3	4	12	—10	
14	30	22	24	39.49	1 to 150	4	5	14	—12	

Larger sizes or different proportions of Steam and Water Cylinders on hand, or made to order at short notice.

These Pumps will be lined with gun metal when used to pump liquors requiring it.

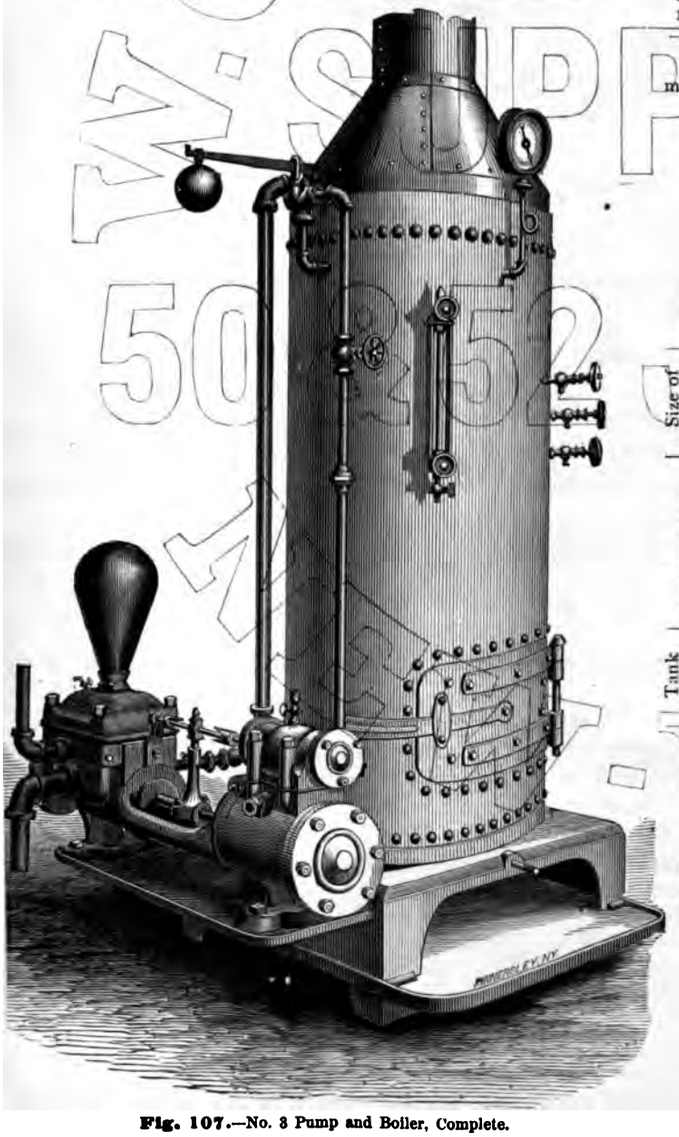


Fig. 107.—No. 3 Pump and Boiler, Complete.

COMPLETE, WITH BOILER.

	Size of Pump No.	Diameter Steam Cyl. in inches.	Diameter Water Cyl. in inches.	Lgth. of Stroke in inches.	Gallons per Stroke.	Strokes per Minute.	Size of Steam Supply Pipe.	Size of Steam Exhaust Pipe.	Size of Suction.	Size of Discharge.	Price, with Boiler and Fittings, Complete.
	1	3	2	4	.06	1 to 300	½	¾	2—1¼	2—1	$425 00
	2	4	2½	6	.10	1 to 300	½	¾	2—1¼	2—1	475 00
	3	5	3¼	7	.25	1 to 275	¾	1	2—2	2—1½	525 00
	4	5½	3¾	7	.34	1 to 275	¾	1	2—2	2—1½	550 00
	5	7	4½	10	.69	1 to 250	1	1¼	2—3	2—2½	750 00
	6	7½	5	10	.85	1 to 250	1	1¼	2—3	2—2½	775 00
	7	10	6	12	1.46	1 to 200	1¼	1½	—4	2—3	950 00
	8	12	7	12	1.99	1 to 200	2	2½	—5	2—3½	1050 00
Tank Pumps.		5½	5½	6	.62	1 to 275	¾	1	—3	—2	600 00
		7½	7½	9	1.72	1 to 275	¾	1¼	—4	—3	775 00
		8	8	12	2.65	1 to 250	1	1¼	—5	—5	862 50
		10	10	16	5.43	1 to 250	1¼	1½	—6	2—4 or 1—6	1300 00

Larger sizes, with upright, or horizontal tubular, locomotive or patent boilers, to order at short notice.

Any desired style of boiler furnished at lowest market price.

The above prices include Pump, Boiler, Boiler Base, Base Plate, Grates, Smoke Bonnet, Steam Gauge, Water Gauge, Gauge Cocks, Blow-off Cocks, Safety Valve, together with the Steam Pipes, Exhaust Pipes, and Feed Pipe, with their necessary valves, unions, etc., complete and ready for operation.

BLAKE'S PATENT STEAM PUMPS.

PUMPS FOR FEEDING BOILERS AND FORCING WATER UNDER HEAVY PRESSURE.

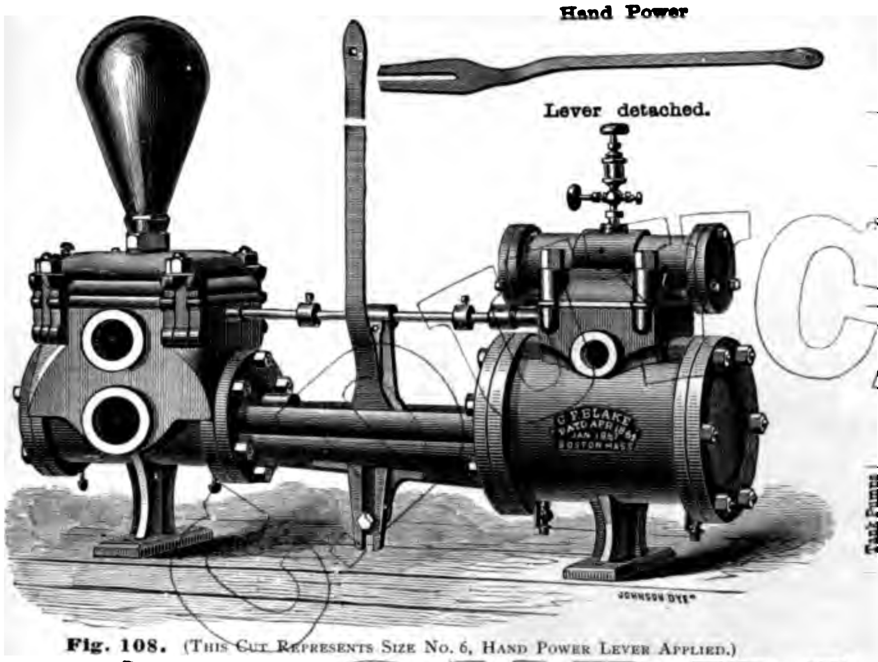


Fig. 108. (This Cut Represents Size No. 6, Hand Power Lever Applied.)

COMBINED PUMP AND BOILER.

Size. No.	Steam Cylinder.	Water Cylinder.	Stroke.	Gallons per Stroke.	Strokes per Minute Capable of running.	Steam Pipe.	Exhaust Pipe.	Suction Pipe.	Discharge Pipe.	Price Complete.
	DIMENSIONS OF STEAM PUMP.									
1	4	2½	3½	.07	1 to 350	½	¾	1	¾	$425 00
2	4	2½	5	.11	1 to 350	½	¾	1¼	1	475 00
3	5½	3¼	7	.25	1 to 300	½	¾	1½	1¼	525 00
4	6	3¾	7	.33	1 to 300	¾	1	2	1½	550 00
5	7¼	4½	10	.69	1 to 250	1	1½	2½	2	750 00
6	8	5	10	.85	1 to 250	1	1½	3	2½	775 00
6½	8	5	12	1.02	1 to 200	1	1½	3½	3	820 00
7	10	6	12	1.47	1 to 200	1¼	2	3½	3	950 00
8	12	7	12	2.00	1 to 200	1½	2½	4	3	1050 00
Tank Pumps. A	4	4	5	.27	1 to 350	½	¾	1½	1¼	500 00
B	5½	5½	7	.72	1 to 300	½	¾	2½	2	600 00
C	7¼	7	10	1.66	1 to 250	1	1½	4	3	775 00
CC	8	6	12	1.47	1 to 200	1	1½	3½	3	820 00
D	8	8	12	2.61	1 to 200	1	1½	5	3½	862 50

No.	Diameter Steam Cylinder.	Diameter Water Cylinder.	Length of Stroke.	Gallons per Stroke.	Strokes per Minute Capable of running.	Capacity per Minute at Ordinary Speed.	Steam Pipe.	Exhaust Pipe.	Suction Pipe.	Discharge Pipe.	Price.
0	3½	2⅛	3	.04	1 to 350	150 strokes, 6 gallons.	⅜	½	1	¾	$100 00
1	4	2½	3½	.07	1 to 350	150 " 11 "	½	¾	1	¾	150 00
2	4	2½	5	.11	1 to 350	150 " 16 "	½	¾	1¼	1	200 00
3	5½	3¼	7	.25	1 to 300	125 " 31 "	½	¾	1½	1¼	250 00
4	6	3¾	7	.33	1 to 300	125 " 42 "	¾	1	2	1½	275 00
5	7¼	4½	10	.69	1 to 250	100 " 69 "	1	1½	2½	2	375 00
6	8	5	10	.85	1 to 250	100 " 85 "	1	1½	3	2½	400 00
6½	8	5	12	1.02	1 to 250	100 " 102 "	1	1½	3½	3	425 00
7	10	6	12	1.47	1 to 250	100 " 147 "	1¼	2	3½	3	475 00
8	12	7	12	2.00	1 to 250	100 " 200 "	1½	2½	4	3	550 00
9	14	8	12	2.61	1 to 250	100 " 261 "	2	3	5	3½	600 00
10	16	9	18	4.96	1 to 175	70 " 347 "	2	3	6	4	800 00
11	18	12	24	11.75	1 to 150	50 " 588 "	2	3	8	6	
12	20	14	24	16.00	1 to 150	50 " 860 "	2½	3½	10	8	

With Hand Power Attachment.

CAMERON'S SPECIAL STEAM PUMP.

REGULAR LIST WITH GENERAL DATA.

Take particular notice that to simplify this list the NUMBERS indicating the sizes of Pumps have been REARRANGED. This was done to avoid the half sizes which had been introduced. In ordering, be sure to say: Pump, number so and so, NEW LIST.

In comparing this list with that of other makers, compare the sizes of the Cylinders and length of Stroke, and not the numbers of the Pumps.

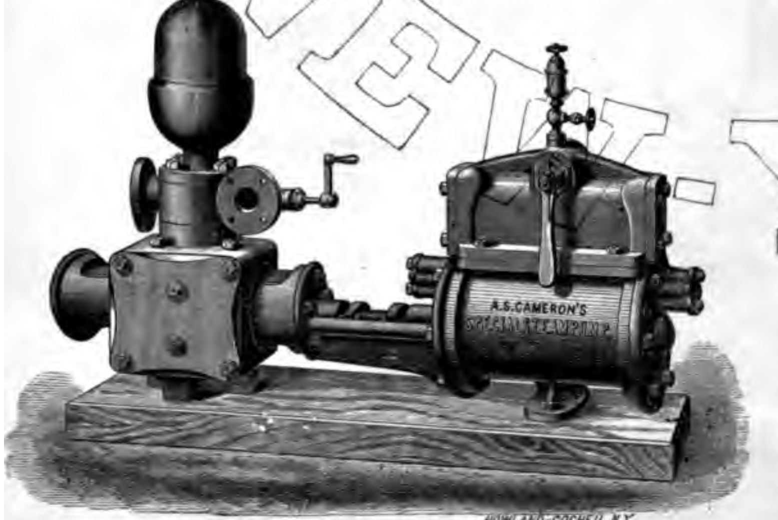


Fig. 109.

Numbers.	Price, with Iron Pump Cylinder and Piston-rod.	Price, having the Pump, Lining, Piston, and Piston-rod of Composition.	Diameter of Steam Cylinder in inches.	Diameter of Pump Cylinder in inches.	Stroke of Piston in inches.	Capacity per Double Stroke in gallons.	Capacity at Ordinary Speed per Minute.	Boilers, in Horse Power, they will supply.	Steam Pipe.	Exhaust Pipe.	Suction Pipe.	Discharge Pipe.	Diameter of Flange Suction Pipe.	Diameter of Flange on Discharge Pipe.	Length over all.	Height over all.	Width over all.
1	$75	$80	4	2	6	⅙	10	25	⅜	½	1	¾			3—4	1—6	—10
2	100	108	5	2½	6	¼	15	40	½	¾	1¼	1			3—4	1—9	—11
3	150	160	6	3	7	⅓	25	80	¾	1	1½	1¼			3—11	2—4	1—1
4	200	215	7	3½	7	$\frac{4}{10}$	35	120	¾	1	2	1½			3—11	2—4	1—3
5	275	290	7	3½	10	$\frac{6}{10}$	45	150	¾	1¼	2½	2		6	4—10	3—1	1—5
6	325	340	8	4	10	1⅒	60	225	1	1½	2½	2		6	4—10	3—1	1—6
7	400	425	10	5	12	2	80	350	1¼	2	3	2½	7½	6½	5—4	3—7	1—9
8	425	450	10	6	12	3	110	425	1¼	2	4	3	9	7½	5—4	3—11	1—9
9	480	520	12	7	12	4	140	500	1½	2½	4	3	9	7½	5—6	4—3	2—
10	550	600	14	9	15	8½	270		2	3	5	4	10	9	6—9	5—1	2—6
11	700	760	16	10½	15	11⅓	325		2	3	7	6	13	12	6—11	6—1	2—11
12	850	950	18	12	18	$17\frac{4}{10}$	400		2½	4	10	8	17	15	8—	6—5	3—3

The first four sizes are made to work by hand when so required.

GUILD & GARRISON'S IMPROVED DIRECT AND DOUBLE-ACTING UNION STEAM PUMP AND FIRE ENGINE.

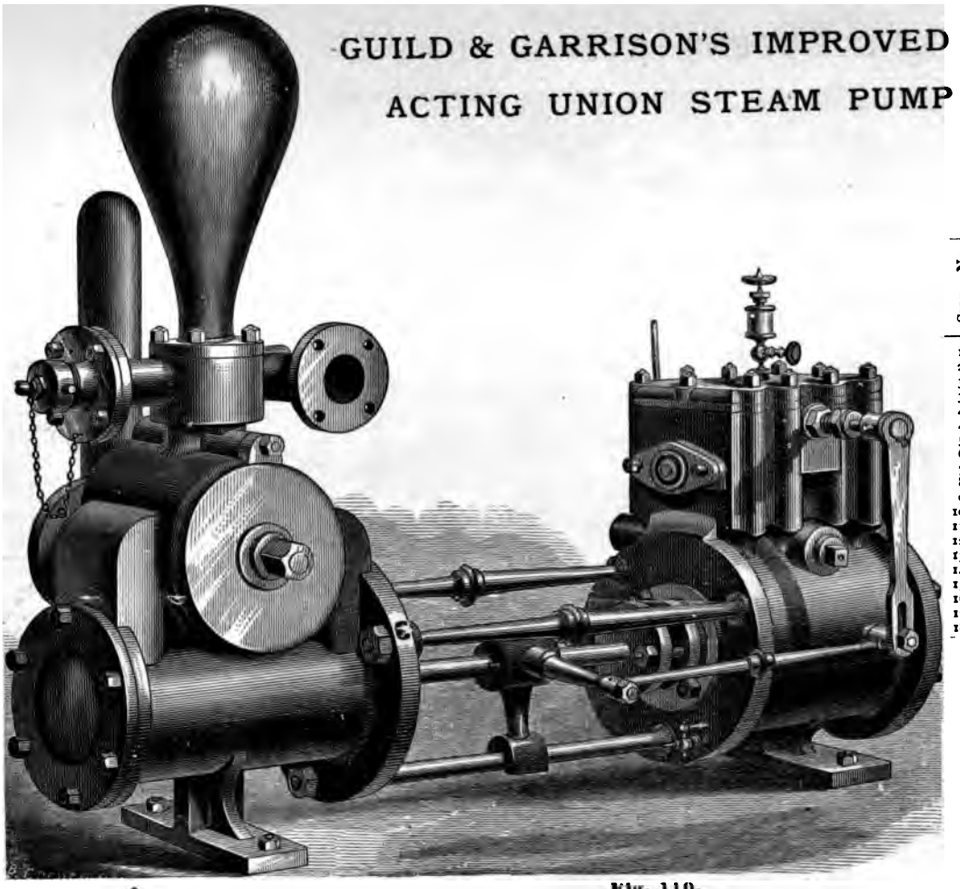


Fig. 110.

Size. No.	Diameter of Steam Cylinder in ins.	Diameter of Water Cylinder in ins.	Capacity in Gallons per minute.	Diam. of Pipes in Inches. Suction.	Discharge.	Steam.	Exhaust.	Price
1	3½	2	12	1¼	1	½	¾	$100 00
2	5	3	30	1½	1¼	¾	1	200 00
3	6	3½	40	2	1½	1	1¼	250 00
3½	6	3½	80	2	1½	1	1¼	325 00
4	8	4½	130	3	2	1¼	1½	400 00
4½	10	5	160	3	2½	1¼	1½	450 00
5	10	6	200	3½	2½	1¼	1½	475 00
6	12	7	300	4	3	1½	2	550 00
7	15	7	300	4	3	2	2½	600 00
8	12	10	510	5	4	1½	2	650 00
9	15	10	510	5	4	2	2½	700 00
10	18	10	510	5	4	2	3	800 00
11	12	14	933	8	6	1½	2	900 00
12	15	14	933	8	6	2	2½	
13	18	14	933	8	6	2	3	
14	20	14	933	8	6	2½	3½	
15	24	14	933	8	6	3	4	
16	24	18	2000	10	10	3	4	
17	24	20	2700	12	12		4	
18	24	24	4000	16	16	3	4	

NIAGARA DIRECT-ACTING PUMP

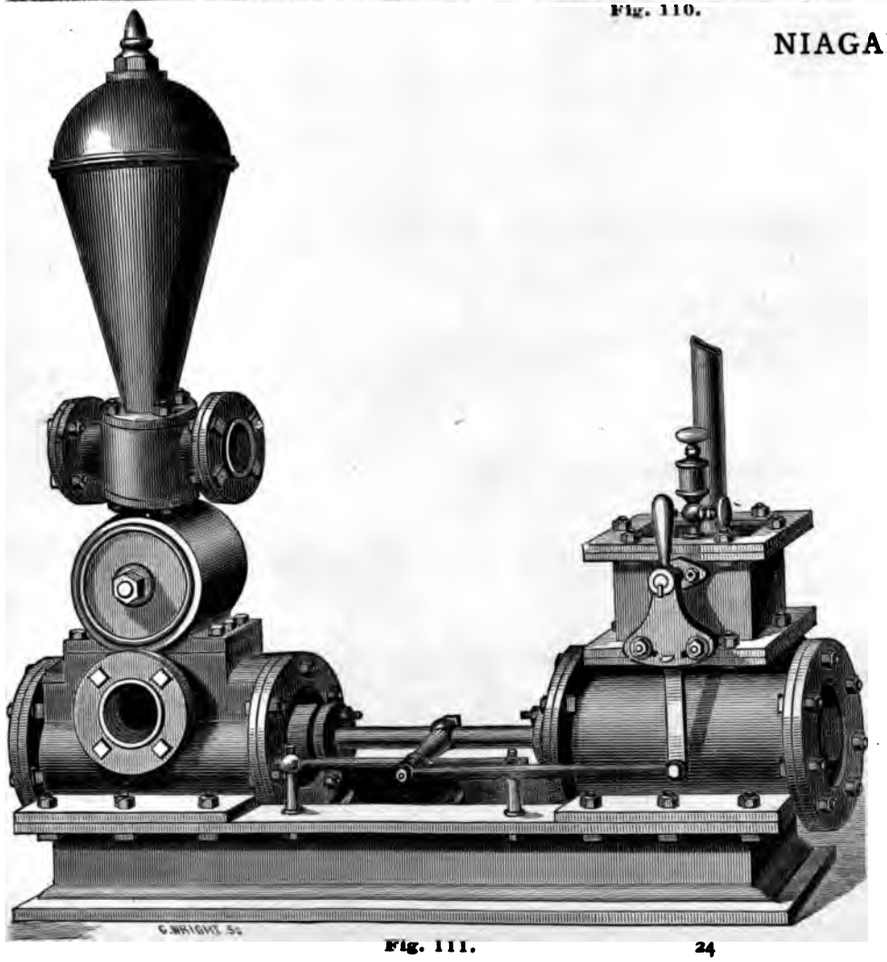


Fig. 111.

Size. No.	Diam. of Steam Cyl. in ins.	Diam. of Water Cyl. in ins.	Stroke. Inches.	Revolutions.	No. of Gallons Dischar'd per min.	Price.
0	3	2	3	150	12	$120 00
A	3½	2	6	130	20	140 00
1	4	2	6	130	20	160 00
2	5	2½	8	120	40	240 00
3	7	3½	9	110	87	350 00
4	9	5	10	100	170	460 00
5	12	7	12	90	360	575 00
6	14	8½	14	80	549	700 00
7	16	10	16	70	761	850 00
8	18	12	18	65	1144	1025 00
9	20	14	20	60	1600	
10	22	16	22	55	1904	
11	24	18	24	50	2642	
12	26	20	26	50	3536	

NIAGARA DIRECT-ACTING STEAM WRECKING AND TANK PUMP.

Size. No.	Diam. of Steam Cyl. in ins.	Diam. of Water Cyl. in ins.	Stroke. Inches.	Revolutions.	No. of Gallons Dischar'd per min.	Price.
1½	4	2½	6	125	32	$200 00
2½	5	3½	8	110	77	310 00
3½	7	5	9	100	153	410 00
4½	9	7	10	90	300	525 00
5½	12	8½	12	80	470	650 00

NIAGARA CRANK PUMP AND ENGINE.

Size. No.	Diam. of Steam Cyl. in ins.	Diam. of Water Cyl. in ins.	Stroke. Inches.	Revolutions.	No. of Gallons Dischar'd per min.	Price.
1	4	2	4	200	20	$225 00
2	5	2½	5	180	40	300 00
3	7	3½	6	160	80	400 00
4	9	5	7	110	135	550 00
5	12	7	8	100	250	650 00
6	14	8	10	85	348	

LANSDELL'S PATENT STEAM SYPHON PUMPS.

DOUBLE SUCTION LIFT AND FORCE PUMPS.

High Pressure Pumps are constructed to work with 30 lbs. and upward, steam pressure. Low Pressure, from 30 lbs. down. Set the pumps, whenever practicable, twelve feet above the surface of the water.

A, Body of Syphon.
B, Steam Pipe.
C, C, Suction Pipe.
D, E, Discharge Pipe.

Fig. 112.

OPERATION.—Steam is turned on through the steam pipe B, and rushes across the globular chamber A into D, carrying the air in A and D before it, thereby exhausting the air from A. Water to supply its place rises through the suction pipes C, C, from atmospheric pressure, as in ordinary suction pumps, when the steam jet forces it onward through D, E, with a velocity proportioned to the pressure in the steam boiler.

Diameter of Discharge.	Capacity in Gals Per Minute.	High Pressure.	Low Pressure.
Double Suction, ¾ inch.	30	$8 00	$10 00
" " 1 "	50	10 00	12 50
" " 1½ "	120	17 50	20 00
" " 2 "	200	22 50	25 00
" " 2½ "	320	35 00	40 00
" " 3 "	450	45 00	50 00
" " 4 "	800	65 00	75 00
" " 6 "	1800	150 00	175 00
Single Suction, 1¼ "	60	12 50	15 00

PORTABLE RAILWAY SYPHON.

Fig. 113.

This shows the mode of applying the Steam Syphon to fill a locomotive tender from any body of water within reach near the side of the road. B is the steam hose attached to the locomotive boiler by a steam cock. A, the Steam Syphon. C, the steam cock to be tapped into the boiler. D D, the suction orifices. E, the discharge hose.

Steam is let on through the hose B, and water is forced through the discharge hose E into the tender. No. 1 will supply the ordinary quantity of water required by a tender in 10 to 12 minutes. No. 2 in 6 to 8 minutes.

No. 1, 25 feet each of Steam and Discharge Hose						$110 00
30	"	"	"	"	"	125 00
35	"	"	"	"	"	135 00
40	"	"	"	"	"	145 00
45	"	"	"	"	"	155 00
50	"	"	"	"	"	165 00
No. 2, 25	"	"	"	"	"	145 00
30	"	"	"	"	"	155 00
40	"	"	"	"	"	180 00
50	"	"	"	"	"	200 00

Every Locomotive provided with this appliance can be used as a fire-engine, throwing water from the tender or any adjacent water.

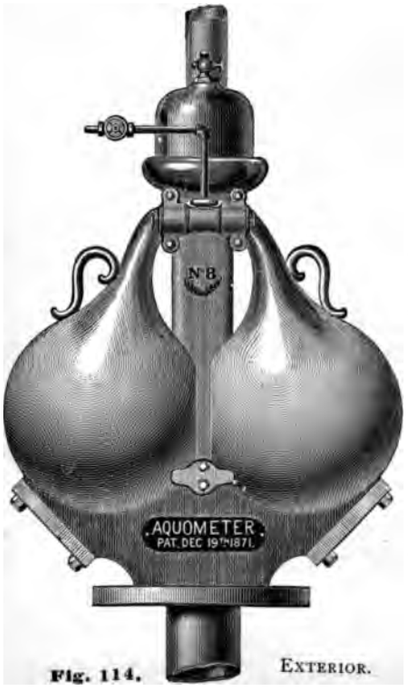


Fig. 114. EXTERIOR.

AQUOMETER STEAM PUMP,

Characterized by an absence therein of purely mechanical elements. It consists, as shown in the illustrations, of two working-chambers, combined with an interposed pressure-chamber. Its only moving parts are the customary check-valves, arranged to prevent a return of the water entering the working-chambers and discharge-pipe, and a very simple and ingenious steam-valve.

There are no rubbing surfaces to produce friction or require lubrication; no parts requiring delicate adjustment or special attention, and none which are subjected to great strain or wear.

No.	3	4	5	7	9
Steam Supply Pipe	⅜	½	¾ or ½	1 to ¾	1¼
Suction Pipe	2	2½	3½	4	6
Discharge Pipe	1½	2	2½	3	5½
Max. discharge per min., gals.	60	100	200	400	1000
Price	$125	170	225	375	750

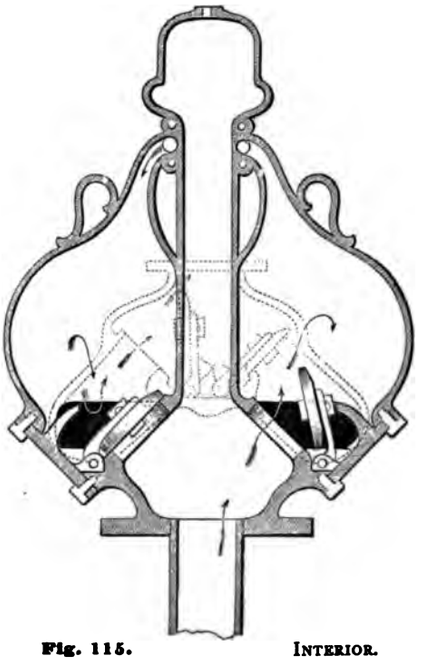


Fig. 115. INTERIOR.

ROTARY FORCE PUMPS.

Fig. 116.

The illustrations present sectional views of this newly invented Rotary Pump, combining many novel and important features, by which every good point of the Piston Pump is obtained, without any of its objectionable ones, together with the economy of cost, space, power, and capacity incident to the Rotary.

An examination of the drawing will demonstrate that it is *absolutely positive* as a suction and force-pump—as much so as the best Piston Pump.

The entire capacity of the cylinder is utilized, both compartments, outside and inside the eccentric ring, being filled and emptied at each revolution, whether the speed be fast or slow.

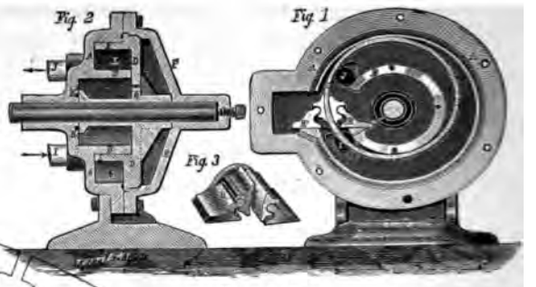


Fig. 117.

No.	Diameter of Pipes. Suction.	Discharge.	Size of Pulleys. Diameter.	Face.	Revolutions for Ordinary Work.	Gallons discharged each revolution.	Capacity at full speed per minute.	Price. Iron.	Bronze.
1	1 inch.	1 inch.	10 inch.	2¼ inch.	200 to 300	.114	34 Gallons.	$40 00	$75 00
2	2½ "	2 "	14 "	4½ "	150 to 250	.385	96 "	75 00	125 00
2½	3 "	2½ "	16 "	5 "	125 to 225	.832	187 "	100 00	160 00
3	3½ "	3 "	18 "	6½ "	100 to 200	1.32	264 "	125 00	200 00
4	4½ "	4 "	20 "	8½ "	100 to 175	2.22	388 "	200 00	300 00
6	7 "	6 "	26 "	10½ "	100 to 150	5.65	847 "	400 00	
8	10 "	8 "	30 "	12 "	75 to 110	12.19	1340 "	700 00	

Sizes 1, 2, 2½, and 3, are fitted with tight and loose pulleys. Any desired size of pulley furnished in place of those above mentioned. The proper speed of a Pump depends somewhat upon circumstances, such as height of suction, etc. The figures given above are for the ultimate rate of speed under ordinary circumstances. For Fire Pumps, the speed should be increased on No. 2 to 350, No. 2½ to 300, No. 3 to 250, No. 4 to 200.

THE "EXCELSIOR"
COMPENSATING ROTARY, SUCTION, AND FORCE PUMP.
FOR RAISING WATER, OILS, SIRUPS, OR OTHER FLUIDS.

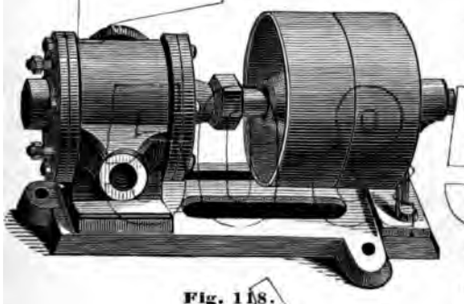


Fig. 118.

No.	Capacity of each size at ordinary maximum speed. Revolutions per minute.	Gallons per minute.	Size of Suction and Delivery Pipe.	Price m'ted with tight and loose pulleys, r'dy for use.	How Driven.	Size of Pulleys.
1	Barrel Pump.	6 to 10	1 inch.	$25 00	Hand.	
3	60 to 80	15 to 20	1½ "	40 00	Hand.	
3	180 to 200	40 to 50	1½ "	45 00	Power.	12 × 3 in
4	60 to 75	30 to 37	2 "	55 00	Hand.	
4	100 to 150	53 to 80	2 "	75 00	Power.	14 × 4 "
5	100 to 425	120 to 150	3 "	150 00	Power.	16 × 5 "
5	Blower.		3 "	100 00	Power.	14 × 4 "
6	"		2½ "	200 00	Power.	18 × 8 "

The prices given are for iron. If ordered to be made of other material, the difference in cost of metal will be added in all cases.

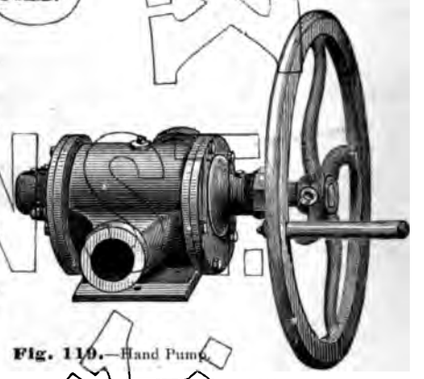


Fig. 119.—Hand Pump.

THE ABOVE PUMP IS PARTICULARLY ADAPTED FOR USE IN PAPER AND OTHER MANUFACTORIES, SUGAR REFINERIES, DISTILLERIES, RAILROAD STATIONS, OIL REFINERIES, STEAMBOATS, ETC. ALL PUMPS ARE WARRANTED TO GIVE ENTIRE SATISFACTION.

This Pump has many superior and important advantages, not possessed by any hitherto in use. Its construction is exceedingly simple, compact, and strong. It has no angles, CAMS, or other internal machinery to get out of order or consume power. It can be run equally well either way, and will not get choked from any cause, and is self-compensating as to wear. The capacity per revolution, of any given size, is much greater than that of any other make, of like external dimensions.

CENTRIFUGAL PUMP.

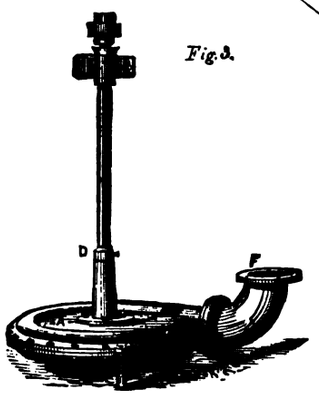


Fig. 120. THE VERTICAL PUMP.

No. of Pump.	Size of Discharge Pipe in in.	Capacity per minute. Gals.	Diameter of Pulley in in.	Face of Pulley in in.	Horizontal. Iron.	Horizontal. Brass.	Vertical. Iron.	Vertical. Brass.	Primers. Extra. Iron.	Primers. Extra. Brass.
1½	1½	100	5	5	$35	$65	$30	$55	$10	$15
1¼	1¼	250	5	5	50	100	40	90	10	20
2	2	350	7	6	70	125	60	110	15	25
2½	2½	500	7	6	80	150	70	135	15	25
3	3	700	7	6	95	175	75	150	20	35
3½	3½	900	7	7½	110	230	95	200	25	40
4	4	1200	8	10	130	275	110	240	25	55
5	5	1800	10	10	165	350	140	315	30	70
6	6	2500	12	12	200	410	170	360	40	85
8	8	4000	15	12	310		265		65	
10	10	6000	20	12	395		330		75	
12	12	9000	24	14	500		420			
15	15	14000	30	16	710		600		140	
22	22	35000	48		1500		1200		175	

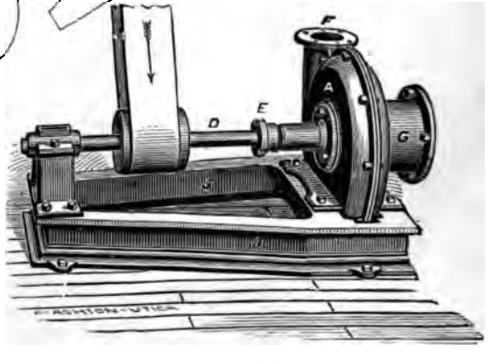


Fig. 121. THE HORIZONTAL PUMP.

W. SUPPLIES CO.

WRIGHT'S PATENT BUCKET-PLUNGER STEAM PUMPS

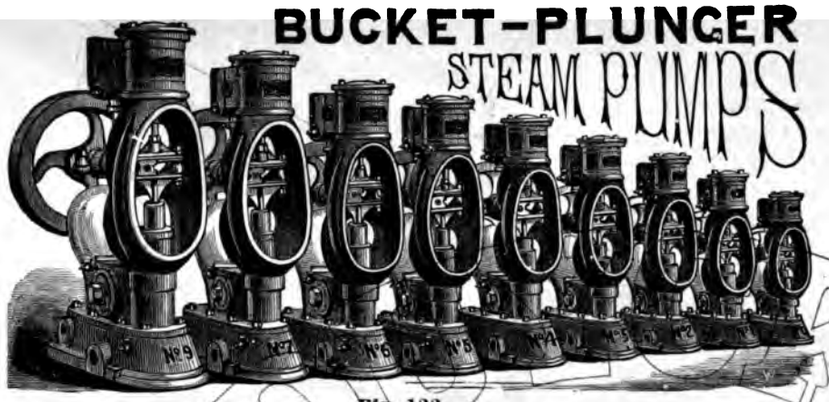


Fig. 122.

No. Designating Sizes.	Diameter of Steam Cylinder in inches.	Diameter of Water Plunger in inches.	Revolutions per minute, varying with kind of work and pressure.	Displacement in Gallons per Revolution.	Boilers in Horse Power they will supply.	Length of Floor Space Required, in feet and inches.	Height in feet and inches required to set Pump.	Width of Space in feet and inches required for Pump.	Weight of Pump in Pounds.	Size of Steam Pipe.	Size of Exhaust Pipe.	Size of Suction Pipe.	Size of Discharge Pipe.	PRICE.
0	4	2¼	50 to 200	.04	10 to 40	1— 3	2— 3	1— 4	175	⅜	½	1	¾	$90 00
1	5	2¾	50 to 200	.07	15 to 60	1— 6	2— 7	1— 5	275	½	¾	1¼	1	125 00
2	5¾	3½	40 to 175	.10	20 to 80	1—10	2—10	1— 7½	350	½	¾	1½	1¼	175 00
3	7	4¼	40 to 175	.18	25 to 100	2— 1	3— 1	1—10	550	¾	1	2	1½	225 00
4	8	5¼	30 to 150	.38	50 to 150	2— 5	3—11	2— 3	900	1	1¼	3	2	275 00
5	10	6½	30 to 150	.54	50 to 200	2—10	4— 2	2— 8	1200	1	1¼	3½	2½	350 00
6	10	7	25 to 125	.91	75 to 300	2—10	5— 2	2— 8	1600	1¼	1½	4	2½	425 00
7	12	8	25 to 125	1.30	75 to 400	3— 6	5— 6	3	1900	2	2½	5	3½	500 00
8	14	10	25 to 125	2.04	100 to 500	4— 6	5— 8	3—4	2850	2½	3	6	5	650 00

In case of fire or other emergency, the speed may be considerably increased beyond figures stated above.

HAND BOILER FEED PUMP, ON BASE.

Fig. 123.

Size of Bore, inch,	2	2½	3
For Size Pipe, "	1	1	1¼
On Base, Figure.. } On Plank..... }	$12 00	14 00	16 00

PRESSURE PUMP, FOR TESTING BOILERS.

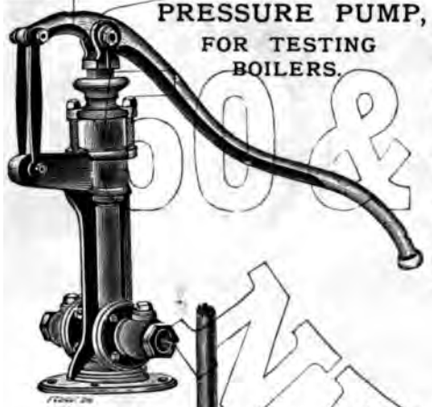


Fig. 124.

Fig. 124 represents a Pump for generating cold water pressure up to six hundred pounds to the square inch, if sufficient leverage should be applied. This is not calculated for a suction and lift pump, as the piston is too small, but should be placed where the water is about on a level with the Pump, or only a short distance below it. For testing the condition of boilers, pipes, or vessels of any kind, this will be found very useful and thoroughly practical. We make two sizes.

No. 1, with 1¼ inch piston..... $25 00
No. 2, " 1½ " " 30 00

BOILER FEED PUMPS.

Boiler Pumps, all sizes, from 1¼ to 3 inches, constantly on hand. Measurement taken from diameter of plunger. Valves of these pumps are detached from the body, and are constructed of the best steam metal.

A Pump constructed as above enables the user to repair it at small cost. Valves constantly on hand.

1¼ inch Plunger..... $12 00
1½ " " 15 00
2 " " 20 00
2½ " " 25 00
3 " " 35 00

WITH TWO PULLEYS, FOR HAND OR POWER.

2 inch bore, 3 inch stroke, medium size column, and 2 Pulleys..... $30 00
2½ inch bore, 3 inch stroke, medium size column, and 2 Pulleys..... 40 00
3 inch bore, 3 inch stroke, medium size column, and 2 Pulleys..... 50 00

Fig. 125.

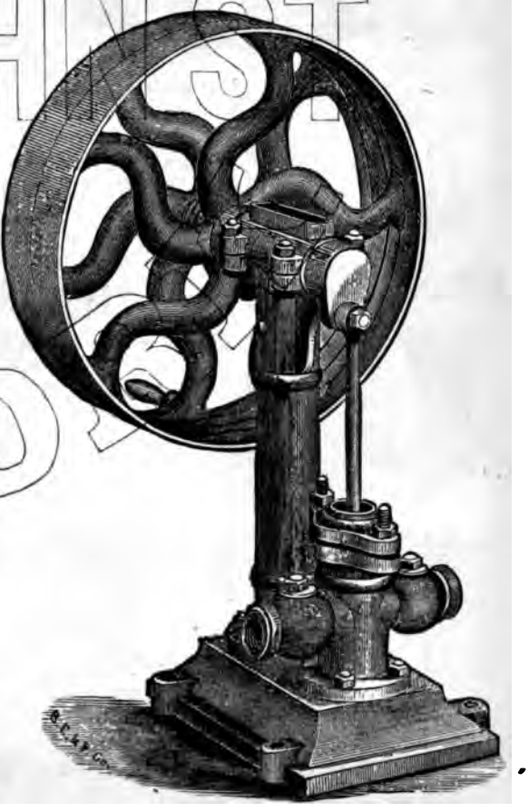


Fig. 126.

STAR DOUBLE ACTING RAILROAD FORCE PUMP.

FOR MACHINE POWER.

(Fig. 127.)

Bore, inch.	Stroke, inch.	Suction and Distribution	Revolutions per minute.	Gallons.	Hand.	Power.
3	8	1½	50	26	$65 00	$65 00
4	8	2	50	47	75 00	75 00
5	8	2½	50	72	90 00	90 00
6	8	3	50	104	110 00	110 00
4	10	2	50	59		95 00
3	12	1½	50	35		70 00
4	12	2	50	70		101 00
5	12	2½	50	108		110 00
5	15	2½	50	130		135 00
6	14	3	50	152		175 00

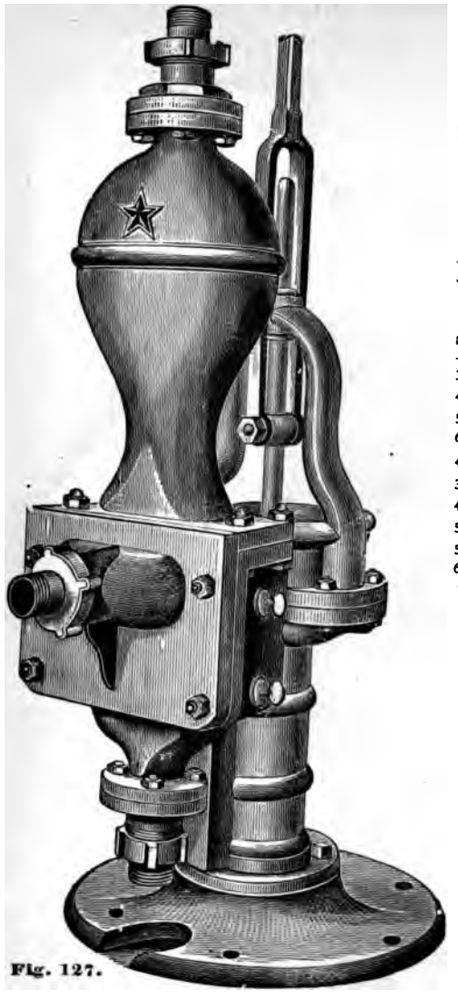


Fig. 127.

Fig. 128.

LIFT AND FORCE PUMPS.

2 inch, Baxter's Patent		$20 00
2½ " " "		27 50
3 " " "		50 00
2½ " " "	Anti-Freezing	30 00
3 " " "	"	55 00
2½ " Marine Pump		27 50

Patent Pendulum Force or Lift Set-Length Pump.

This Pump is particularly adapted for *out-door use*, the working parts being down out of the way of frost, rendering it *anti-freezing*. Also for deep wells, drive wells, and windmills.

Fig. 129.

No. 1, suitable for 1¼ inch pipe, with 3 feet 1¼ inch wrought-iron set-length.

2⅛ inch bore of Cylinder	$15 00
2¼ " " "	15 25
3 " " "	15 50
3¼ " " "	16 00

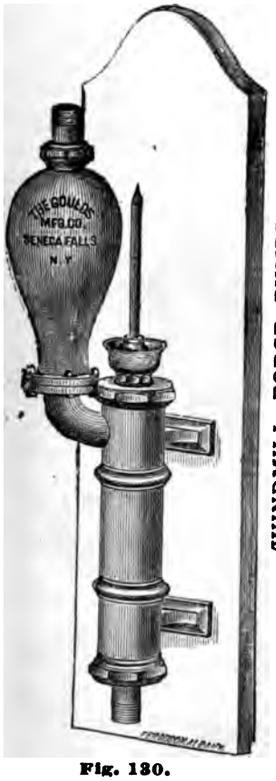


Fig. 130.

WINDMILL FORCE PUMPS.

	IRON.	BRASS.
No. 1, 2 inch bore, for 1 inch Pipes	$7 50	$16 00
" 2, 2½ " " 1¼ " "	8 00	18 00
" 3, 3 " " 1¼ " "	8 50	20 00
" 4, 2 " " with Air Chamber for 1 inch Pipe	9 00	18 00
" 5, 2½ " " " 1½ " "	9 50	20 00
" 6, 3 " " " 1¼ " "	10 00	22 00

Fitted for gas pipe, unless otherwise ordered.

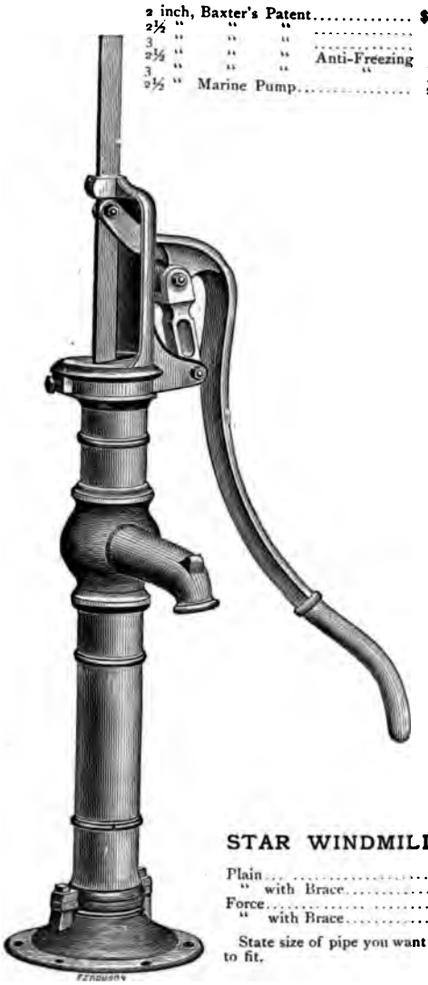


Fig. 131.

STAR WINDMILL PUMP.

Plain	$7 00
" with Brace	8 00
Force	13 00
" with Brace	15 50

State size of pipe you want the Pump cut to fit.

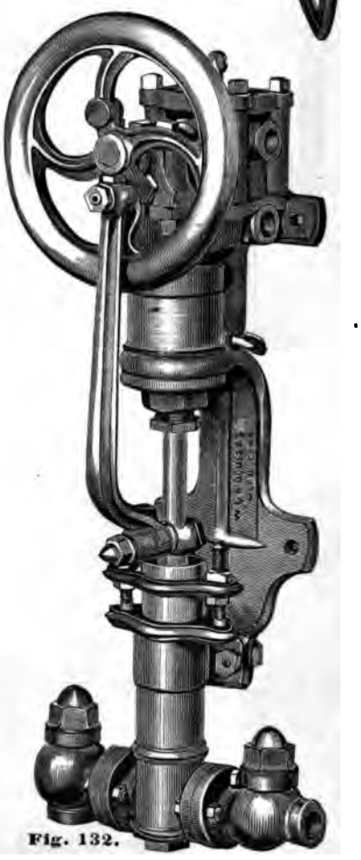


Fig. 132.

DONKEY STEAM PUMP.

With Steam Cylinder, 2¾ inch, and Pump 1½ inch bore, $70 00

REVOLVING TOP CISTERN PUMP.

WITH BOLT FASTENINGS, CYLINDER BORED AND POLISHED.

Fig. 133.

No. 0,	2 in. calibre, suitable for	1 in. pipe,	5½ in. stroke,		$3 50
" 1,	2¼ " " "	1 "	6 "		4 00
" 2,	2½ " " "	1¼ "	6 "		4 50
" 3,	2¾ " " "	1¼ "	6 "		5 00
" 4,	3 " " "	1½ "	6 "		5 50
" 5,	3¼ " " "	1½ "	6 "		6 50
" 6,	3½ " " "	2 "	8 "		8 00
" 7,	4 " " "	2 "	8 "		10 00

ROUSE'S PATENT MALLEABLE IRON FILTER POINT.

Fig. 134.

	Perforated Tin Covering.	Perforated Brass Covering.
1¼ inch, with 48 ¾ inch holes, each....	$4 00	$4 50
1½ " " 52 ⅞ " "	5 00	7 00
2 " " 60 1 " "	8 00	12 00
2½ " " 60 1⅛ " "	12 00	16 00
3 " " 76 1¼ " "	18 00	22 00

The holes are covered by a brass wire gauze, while a perforated sleeve secured around it protects it while being driven down. We make them with gauze of different meshes, according to soil.

PATENT IMPROVED CLAY AND SAND AUGERS.

FOR BORING WELLS.

Clay Augers, 2½ inches, to couple on	1¼ inch pipe....	$6 00
" " 3 " " "	1¼ "	6 75
" " 4 " " "	1¼ "	10 50
" " 6 " " "	1½ to 2 "	20 50
Sand Augers, 2½ inches, to couple on	1¼ inch pipe....	7 50
" " 3 " " "	1¼ "	8 45
" " 4 " " "	1¼ "	13 25
" " 6 " " "	1½ to 2 " ...	25 75

We make also a Sand and Clay Auger combined, which we list at same size and price as Sand Augers.

MALLEABLE IRON DRIVING CAPS.

For receiving blows from wood maul, or block, when struck with iron sledge, for driving wells. Entirely new—our own design and pattern.

Fitted for standard size tubing, 1¼ inch.................$0 72
" " " 1½ " 90
" " " 2 " 1 55
Steel Driving Cap, or Head, for 1¼ inch pipe, each..... 3 00

IMPROVED PITCHER SPOUT CISTERN PUMP.

WITH REVOLVING BRAKE, BOLT FASTENINGS AND CUT-OFF BASE.

Fig. 135.

			Each.
No. 1,	2½ in. calibre, suitable for pipe	1¼ in. calibre....	$4 25
" 2,	3 " " " "	1¼ "	4 75
" 3,	3½ " " " "	1¼ "	5 25
" 4,	4 " " " "	1¼ "	5 75
" 5,	4½ " " " "	1¼ or 1½ in. cal..	6 25

Stroke, four inches each size.

WROUGHT IRON FILTER POINT.

WITH BRASS JACKET.

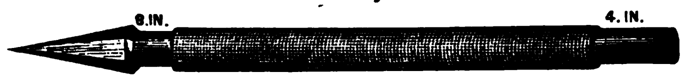


Fig. 136.

We sell several thousand of this style of Point every year. Under the Brass Jacket we place brass wire cloth, and this can be varied in fineness to meet the character of the soil where Point is to be driven.

1¼ inch Point, complete, each..........$4 50 | 1½ inch Point, complete, each...... ...$7 00
2 inch Point, complete, each........ ......$12 00

WORKING CYLINDERS FOR DUG OR DRILLED WELLS, WITH PISTONS AND STUBS FOR RODS, COMPLETE.

Fig. 137.

Fig. 138.

Style.	Bore or inside diameter of Cylinder.	Outside diamet'r of Cylinder and Heads.	Length of Bore of Cylinder.	Prices.		
				Iron.	Brass Cylinder and Iron Caps.	All Brass.
Fig. 137,	2 inch,	4¾ inch,	7 inch,	$2 50	$5 00	$6 00
"	2¼ "	5 "	7 "	3 00	6 00	7 00
"	2½ "	5½ "	8½ "	3 50	7 00	8 00
"	2¾ "	6 "	8½ "	3 75	8 00	9 00
"	3 "	6½ "	9½ "	4 00	9 00	10 00
"	3¼ "	6⅞ "	10 "	4 25	10 00	11 50
"	3½ "	7¼ "	11 "	4 50	12 00	14 00
"	4 "	7⅝ "	12 "	6 50	15 00	18 00
"	4½ "	8⅜ "	12 "	7 00	18 00	21 00
Fig. 138,	2 "	3¼ "	7 "	2 50	5 00	6 00
"	2¼ "	3 7/16 "	7 "	3 00	6 00	7 00
"	2½ "	3⅝ "	8½ "	3 50	7 00	8 00
"	2¾ "	3 11/16 "	8½ "	3 75	8 00	9 00
"	3 "	4 1/16 "	9½ "	4 00	9 00	10 00
"	3¼ "	4⅝ "	10 "	4 25	10 00	11 50
"	3½ "	4⅞ "	11 "	4 50	12 00	14 00
"	4 "	5½ "	12 "	6 50	15 00	18 00
"	4½ "	6 1/16 "	12 "	7 00	18 00	21 00
"	6 "	8 "	12 "	10 00	33 00	40 00
Fig. 139,*	1½ "	1¾ "	16 "	....	8 00	9 00
"	1¾ "	2 "	16 "	....	9 00	10 00
"	1⅞ "	2⅜ "	16 "	5 50	10 00	11 00
"	2 "	2½ "	16 "	6 00	11 00	12 50
"	2¼ "	2 11/16 "	16 "	6 50	11 75	13 50
"	2½ "	2 15/16 "	16 "	7 00	12 50	14 00
"	2¾ "	3 1/16 "	16 "	7 50	13 75	16 00
"	3 "	3¾ "	16 "	8 00	15 00	17 00
"	3¼ "	3⅞ "	16 "	8 25	15 75	17 25
"	3½ "	4 "	16 "	8 50	16 50	21 00
"	3¾ "	4½ "	16 "	9 00	17 25	23 00
"	4 "	4¾ "	16 "	9 50	18 00	26 00
Fig. 140,*	2¼ "	3 1/16 "	16 "	6 50	11 75	13 50
"	2¾ "	3⅞ "	16 "	7 50	13 75	16 00
"	3¼ "	4½ "	16 "	8 50	15 75	17 25
"	3¾ "	5 "	16 "	9 25	17 25	23 00

The several figures, 137, 138, 139, and 140, show our lower working cylinders for Dug or Drilled Wells, which are arranged for connecting iron pipe above and below, excepting fig. 140, which has a strainer to be used only as a submerged Pump. They are adapted to be used with any of our ordinary Pump standards and brakes at top, or without standard and and simply iron pipe running to the top, in some cases of power use, by windmill, etc., where the standard may be dispensed with. By the table the greatest outside diameter is given, showing the size of hole they will go into in the ground.

Those marked thus * have long metal piston and brass bale, either with strainer or without.

Fig. 139.

Fig. 140.

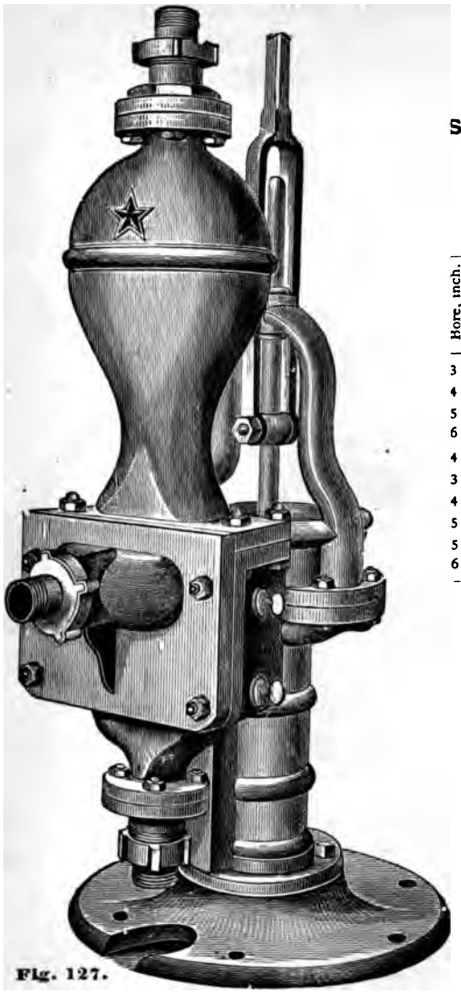


Fig. 127.

STAR DOUBLE ACTING RAILROAD FORCE PUMP.

FOR MACHINE POWER.

(Fig. 127.)

Bore, inch.	Stroke, inch.	Suction and Distribution	Revolutions per minute.	Gallons.	Hand.	Power.
3	8	1½	50	26	$65 00	$65 00
4	8	2	50	47	75 00	75 00
5	8	2½	50	72	90 00	90 00
6	8	3	50	104	110 00	110 00
4	10	2	50	59		95 00
3	12	1½	50	35		70 00
4	12	2	50	70		101 00
5	12	2½	50	108		110 00
5	15	2½	50	130		135 00
6	14	3	50	152		175 00

Fig. 128.

Patent Pendulum Force or Lift Set-Length Pump.

This Pump is particularly adapted for *out-door use*, the working parts being down out of the way of frost, rendering it *anti-freezing*. Also for deep wells, drive wells, and windmills.

Fig. 129.

No. 1, suitable for 1¼ inch pipe, with 3 feet 1¼ inch wrought-iron set-length.

2½ inch bore of Cylinder	$15 00
2¾ " " "	15 25
3 " " "	15 50
3¼ " " "	16 00

LIFT AND FORCE PUMPS.

2 inch, Baxter's Patent				$20 00
2½ "	"	"		27 50
3 "	"	"		50 00
2½ "	"	"	Anti-Freezing	30 00
3 "	"	"	"	55 00
2½ "	Marine Pump			27 50

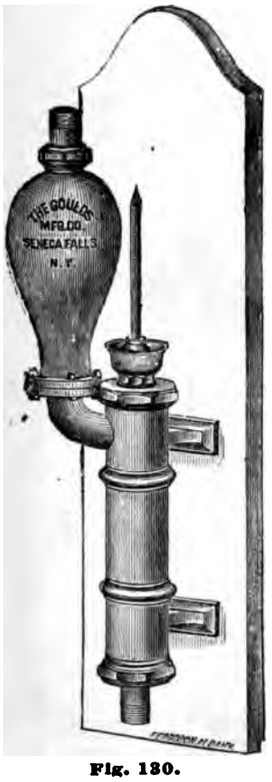


Fig. 130.

WINDMILL FORCE PUMPS.

	IRON.	BRASS.
No. 1, 2 inch bore, for 1 inch Pipes	$7 50	$16 00
" 2, 2½ " " 1¼ " "	8 00	18 00
" 3, 3 " " 1¼ " "	8 50	20 00
" 4, 2 " " with Air Chamber for 1 inch Pipe	9 00	18 00
" 5, 2½ " " " 1¼ " "	9 50	20 00
" 6, 3 " " " 1¼ " "	10 00	22 00

Fitted for gas pipe, unless otherwise ordered.

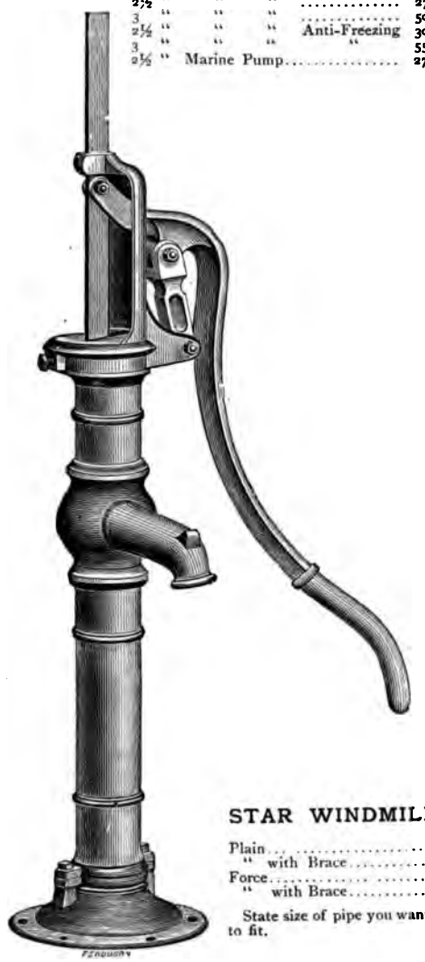


Fig. 131.

STAR WINDMILL PUMP.

Plain	$7 00
" with Brace	8 00
Force	13 00
" with Brace	15 50

State size of pipe you want the Pump cut to fit.

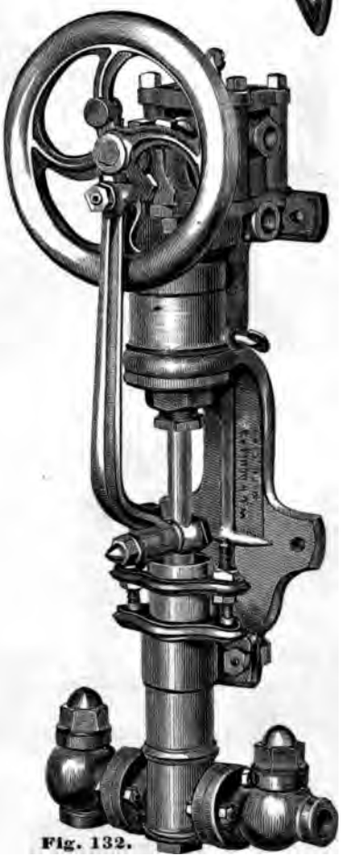


Fig. 132.

DONKEY STEAM PUMP.

With Steam Cylinder, 2¾ inch, and Pump 1½ inch bore, $70 00

PATENT RAILROAD TANK VALVE,

WITH GUN METAL VALVE SEAT.

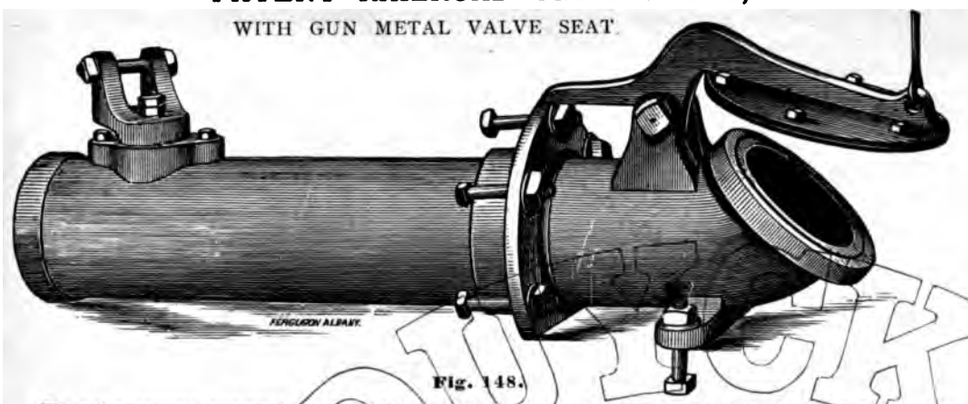


Fig. 148.

Fig. 148 represents our newly patented Railroad Tank Valve, which is superior to all others for the following reasons, viz.: 1st. The Seat is of gun metal, which surmounts the difficulty with other valves, *caused by rusting away of the iron seats, producing a leakage which can not be prevented.* 2d. The Valve is faced with leather where it comes in contact with the Seat, which will not only make a tight joint, but last for an indefinite period. 3d. The Swivel Hinge, to which the sheet iron Delivery Spout is attached, has a Universal Joint, so that the spout may be swung upward, or from one side to the other, as occasion may require. 4th. Where the Spout is not used, rubber or leather hose may be attached to the end, for the delivery of the water. These Valves are being generally adopted for all new railroad water stations, and are rapidly superseding the old-fashioned and improvised tank valves now in use by the most prominent railroad corporations in the country.

6 inches Calibre, length 42 inches, distance from Tank flange to outer end, 26 inches, each..... $30 00

LANSDELL'S PATENT STEAM RAILROAD WATER STATION.

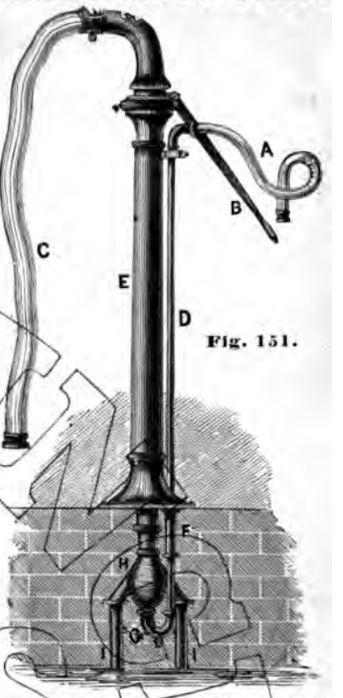


Fig. 151.

Dispenses with tanks, tank houses, stationary power, and attendance. Can not freeze in any climate, under any circumstances. Costs less than one half the price of a frost-proof tank.

The engineer in charge of the locomotive attaches the Hose A to a steam valve in the boiler. Steam passes through the Pipe D and Slip Joint F into the Globe H, producing a vacuum; the water is then lifted through the Pipes I I, and forced through the Column E and hose C into the tender, filling any ordinary tender in about three minutes. When steam is shut off, all the water in the pipe returns into the well, and any condensed steam passes off through the drip valve G, leaving nothing to freeze. The handle B serves to turn the discharge pipe and hose in any direction. The water delivered into the tender is warm, thus utilizing the steam used. The discharge tubes, represented above made of hose, can be made of iron if preferred.

Each, complete, with not more than 15 feet Steam Hose, 15 feet Discharge Hose, and 18 feet of Pipe below the base of the column.....$500 00

POAGE'S WATER COLUMN.

FOR RAILROAD WATER STATIONS.

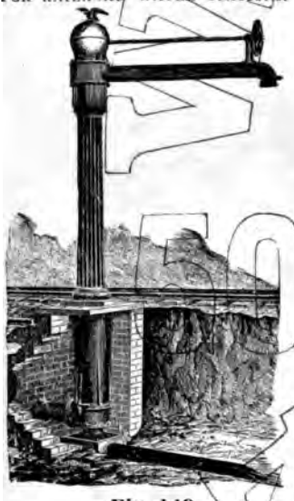


Fig. 149.

We claim the following advantages

1st. It is operated entirely from the top of the tender, without inconvenience or delay.

2d. It returns to its position between the tracks, automatically, without assistance.

3d. It is anti-freezing, the water being drained down below the freezing point, automatically, after being used.

4th. The valve is balanced to the extent necessary to make it operate to the best advantage.

5th. When in use no part of it projects over the opposite track, endangering passing trains.

6th. Each part performs its work well, is very simple, and not liable to get out of order.

The cut represents the Valve operated by a hand wheel, which secures a gradual closing of the valve, and prevents the bursting of the conducting pipe when the water comes through a long pipe, or at a high pressure.

We also make the machine with a lever, which opens and closes the Valve instantly—to be used when the pressure in the conducting pipe is slight.

We offer this machine to railroad men, confident that its excellence will be appreciated by them.

We will furnish these machines to order, and on short notice.

Complete, 8 inch Pipe..... $500 00

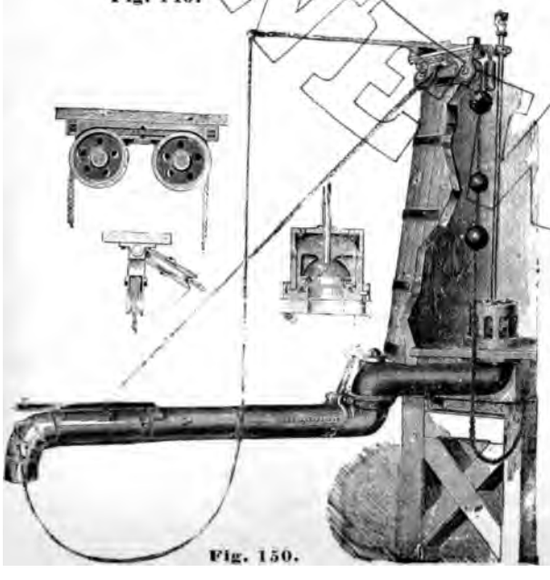


Fig. 150.

Patent Universal Joint, Telescopic Pipe Tank Valve.

This Patent Tank Valve has the following advantages, viz.:

1st. It is raised and lowered same as the common tank valve.

2d. It is moved around laterally the same as the stand pipe and water crane.

3d. It is lengthened or shortened by drawing out or shoving in the Telescopic Pipe.

4th. The joint where it is lowered, raised, or moved around laterally, is a perfect universal joint, and is made water-tight by closing on a rubber ring, thereby preventing all waste of water and formation of ice around the tank.

5th. It may be placed on a tank between two tracks, and serve both tracks.

6th. Where the tank is too near the track to place a common tank valve, it (our Patent Tank Valve) can be placed on the side of the tank, at a sufficient distance from the track, and can be operated in any direction.

This Tank Valve with Telescopic Pipe will reach the hole in a tender at a variation in its position on track of eleven to twelve feet, thereby saving the train from being moved backward or forward to get exactly opposite the Tank Spout, as when the common tank valve is used.

We manufacture the Patent Tank Valve with and without Telescopic Joint, but recommend the Telescopic Joint Tank Valve as superior.

A simple and perfect machine in all its parts and uses, superseding and more than filling the place of the expensive stand pipe and water crane, at a cost very slightly in advance of the common tank valve.

We have a large number of these tank valves in use, and they are all giving perfect satisfaction.

In order to have these Tank Valves perfect, we sell them in all cases complete, with Sheet Iron Conductor, Weight, Chain, Pulley, Lever, etc.

Price, for Valve, Spout, Weight, Chain, Pulley, Lever, etc., complete:

Diameter, inches.....	6	7	8
For Bottom of Tank.....	$71 50	80 30	90 20
For Side of Tank.....	69 30	78 10	

RAILROAD SUPPLIES ON STEROIDS

PLANTATION and FARM BELLS.

Fig. 152.

IRON STEAM WHISTLES.

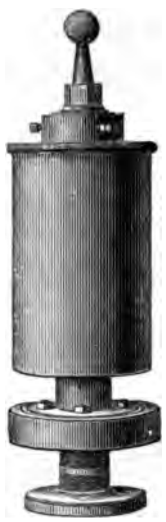


Fig. 154.

This whistle gives a heavy sound and can be heard at very great distances. Fig. 154.

Diameter of Bell	4	5	6	8	10	12	16 in.
Steam Whistle, Single Bell	$20	25	30	40	50	60	80
Steam Gong or Double Bell	36	45	54	72	90	108	144

STEAM WHISTLES.

Fig. 157.

Fig. 158.

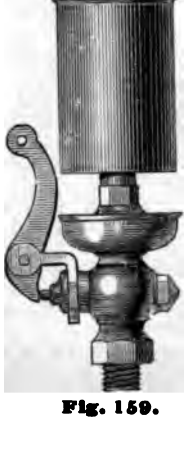


Fig. 159.

IMPROVED STEEL AMALGAM BELLS.

COMPLETE WITH HANGINGS,

As shown in Fig. 152.

15½ inches diameter, weight 62	lbs.	$6 00
16½ " " " 77	"	8 00
18½ " " " 102	"	10 00
21 " " " 132	"	12 00
24 " " " 180	"	20 00

WITH HANGINGS AND FRAME COMPLETE.

Fig. 153.

24 inches diameter, weight 206	lbs.	$25 00
28 " " " 375	"	40 00
30 " " " 422	"	50 00
33 " " " 740	"	75 00
40 " " " 1100	"	130 00
Tolling attachments for 28 and 30 inch bells, extra		4 00
" " " 33 inch bells, extra		5 00
" " " 40 " "		6 00

Whistles and Gongs especially adapted for fire alarms or fog signals, and for large manufacturing establishments to designate the hours of labor.

FITTS' CELEBRATED STEAM GONG.

Fig. 155.

Fig. 155.

These Bells are so adjusted and tuned as to produce a musical fifth chord, or with the addition of a third bell a fifth and eighth. This entirely obviates the harsh sound of the whistle, and by following the law of atmospheric harmonic vibration, while their tones are soft and pleasant near by, their power of sound is immensely increased. The different sizes are toned to different notes of the musical scale, and by various combination may be varied in pitch to a limited extent. They have been heard thirty miles, thus showing their vast powers of sound. It can be applied to any common boiler, as the quantity of steam required to sound it is trifling.

DIRECTIONS FOR CONNECTING TO THE BOILER.

1. Use a 3 inch pipe if the steam be less than 75 lbs. to the inch, if above that, 2½ inch pipe will answer.
2. Connect to the main pipe of the boiler, or to the boiler itself, in such a way that the water caused by the condensing of steam will run back in the boiler.
3. Carry your pipe to the top of the buildings, place the Gong upon it, with the valve as near to the Gong in all cases as practicable.

5 inch, including valve, fits 1¼ inch pipe		$60 00
6 " " " 1½ "		65 00
8 " " " 2 "		80 00
10 " " " 2 "		105 00
12 " " " 2½ "		120 00
12 " 3 tones harmonized, fits 3 "		160 00

STEAM WHISTLES.

Diameter of Bell.	Screw for Iron Pipe.	PRICE. Fig. 157.	Fig. 158.	Fig. 159.
1	¼	$3 00	.....	$4 50
1½	⅜	4 00	$5 00	6 00
2	½	5 00	6 00	7 00
2½	¾	6 50	7 50	9 00
3	1	8 00	9 00	10 50
3½	1¼	10 50	12 00	13 50
4	1¼	12 00	14 00	16 00
5	1½	16 00	18 00	20 00
6	2	22 00	25 00	28 00
8	2½	57 00	60 00	.....
10	2½	120 00	.....	.....
12	3	260 00	.....	...

WHISTLE VALVES.

Fig. 160.

Size	½	¾	1	1¼	1½	2	2½	3 in.
Price, each rough	$2 00	2 75	3 75	4 50	5 50	9 00	15 00	24 00
Price, each finished	$3 50	4 50	5 50	7 00	8 50	14 00	23 00	34 00

FOR SCHOOL-HOUSES, ACADEMII FACTORIES, SHOPS, Etc.

Fig. 153.

WHISTLE CHIMES.

Fig. 156.

Chime of 3 Whistles, 3, 4, and 5 inch $6
" 3 " 4, 5, and 6 inch 9

These Chimes are carefully tuned, so as to form a harm chord.

Other sizes to order.

WHISTLE VALVES.

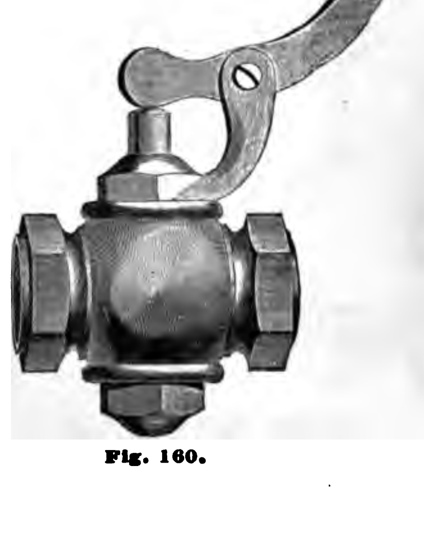


Fig. 160.

GONG BELLS, ETC.

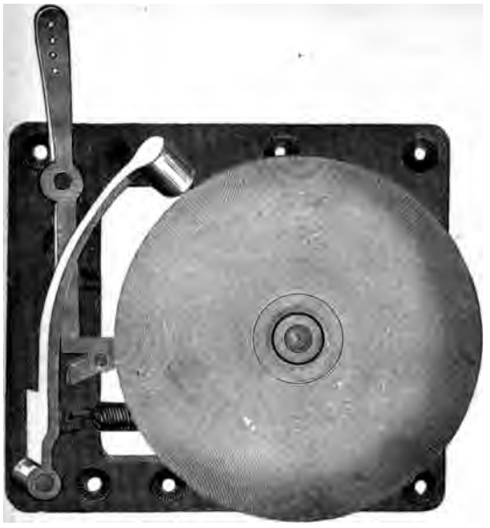


Fig. 161.

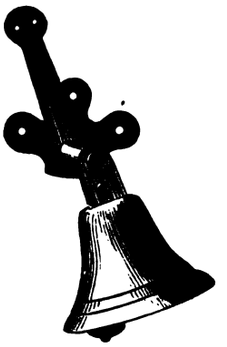


Fig. 162.

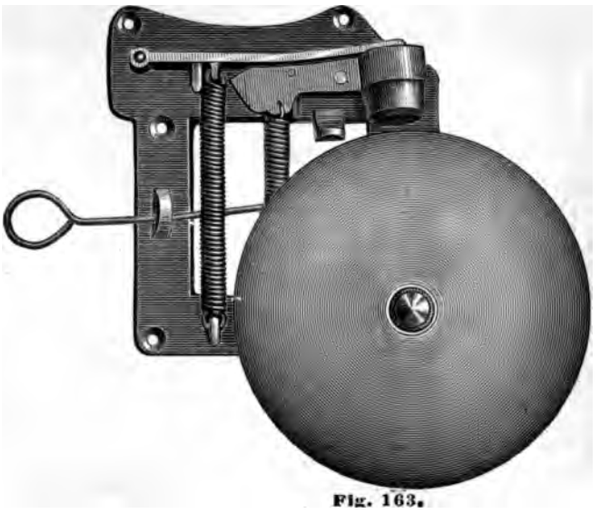


Fig. 163.

Size	3	3½	4	4½	5	6	7	8	9	10	13	15	18	25
Common, Fig. 164	$1 00		$1 15		$1 50	$2 25	$3 15	$4 00	$5 00	$5 85	$14 40	$19 80	$27 00	
Hall Door, Fig. 161	1 20		1 30		1 75	2 50	3 50	4 50	5 50	6 50	16 00	15 22	27 00	
Locomotive, Fig. 163						2 50	3 50	4 50	5 50	6 50				
Trigger	90		1 15		1 50									
Jingle Bell, Fig. 162	2 25	$2 50	2 75	$3 25	4 50	5 50								Only to order.
Steamboat, 2 pulls											27 00	36 00	45 00	
Brass Springs, Fig. 170, per doz.					2 40	2 88	3 36	3 84		4 80				

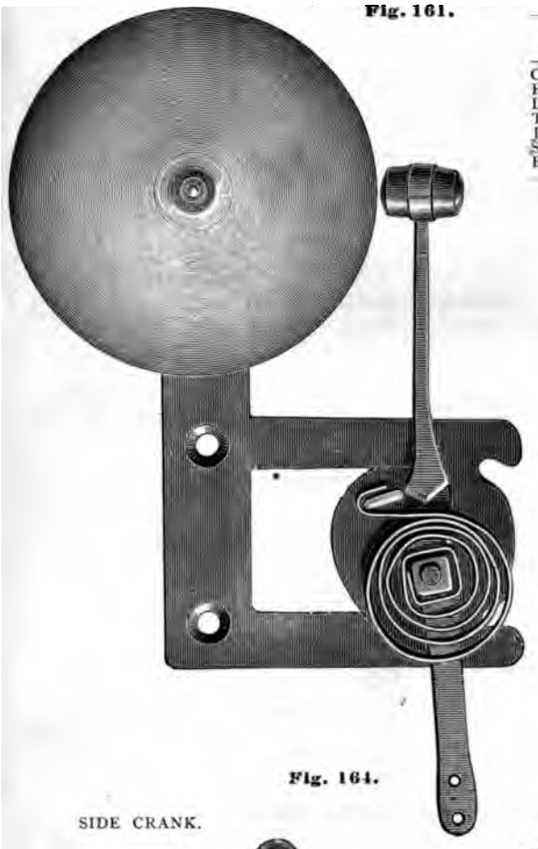


Fig. 164.

Fig. 165.

CAR GONGS.

5 inches, Brass Base, each.....$3 50
5 " Iron " " 2 50

Fig. 170.

FULL SIZE CUT OF 5 INCHES.

SIDE CRANK.

END CRANK.

BELL CRANKS.

(Figs. 166 and 167.)

Small, per doz.....$2 00
Large, " 3 00
Extra Large per doz... 5 50

Fig. 166. Fig. 167.

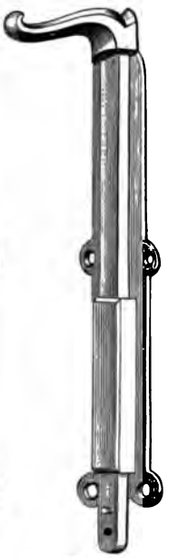


Fig. 168. Fig. 169.

BELL PULLS.

Small, each...$0 40 | Large, each...$1 75
Medium, each, 85 | Ex. L'ge, each, 2 25

HOSE.

RUBBER HOSE.

Size, inches..	½	¾	⅞	1	1¼	1½	1¾	2	2¼	2½	2¾	3	4	5	6	7	8	9	10
2 Ply.........	$0 17	25	29	33	42	50	58	66	75	83	92	1 00	1 33	1 66	2 00	2 33	2 66	3 00	3 33
3 Ply.........	20	30	35	40	50	60	70	80	90	1 00	1 10	1 20							
4 Ply.........	25	37	43	50	62	75	87	1 10	1 12	1 25	1 37	1 50							

STEAM HOSE.

Size, in.	½	¾	⅞	1	1¼	1½	1¾	2	2½	2¾	3	4	5	6
2 Ply,	$0 26	37	44	50	63	75	87	99	1 25	1 38	1 50	2 00	2 49	3 60
3 Ply,	30	45	53	60	75	90	1 05	1 20	1 50		1 80			
4 Ply,	38	55	65	75	93	1 13	1 31	1 50	1 68		2 25			

Five and Six Ply Hose made at an advance of twenty-five and fifty per cent respectively, on Four Ply prices.

Extra Steam Hose served with marlin before vulcanization, ten per cent advance of price-list.

PATENT CARBOLIZED HOSE.

Size, in....	½	¾	⅞	1	1¼	1½	1¾	2
2 Ply.....	$0 22	32	37	42	53	63	73	83
3 Ply.....	25	38	44	50	63	75	88	1 00
4 Ply.....	32	47	54	63	78	94	1 09	1 25

Patent Carbolized Fire Hose, 2½ inch, four ply, with "end strengthened" five ply and capped ends, for steam fire engines, per foot.... $1 25

Patent Carbolized Fire Hose, 2½ inch, three ply, with "end strengthened" four ply and capped ends, for hand engines, per foot...... 1 10

PURE OAK-TANNED LEATHER HOSE.

Diam.	Per Running Foot.
2½ inch, Double Copper or Tinned Copper Rivet Steam Fire Engine Hose, extra heavy........	$1 50
2½ inch, Double Copper or Tinned Copper Rivet Hand Engine Hose, extra heavy........	1 40
2 inch, Single Copper or Tinned Copper Rivet Steamship Hose, extra heavy........	90
1½ inch, Single Copper or Tinned Copper Rivet Steamship Hose, extra heavy........	90
1 inch, Single Copper or Tinned Copper Rivet Steamship Hose, extra heavy........	50

RUBBER SUCTION HOSE.

SMALL SIZES ON SPIRAL WIRE.

Inter. Diam.	Per Foot.	Inter. Diam.	Per Foot.
¾ inch........	$0 70	1½ inch........	$1 50
1 "	90	1¾ "	1 90
1¼ "	1 15	2 "	2 30

ON GALVANIZED IRON RINGS, OR GALVANIZED SPIRAL BAND IRON.

For hand and steam fire engines, wrecking pumps, mining, etc.

Inter. Diam.	Per Ft.	Inter. Diam.	Per Ft.	Inter. Diam.	Per Ft.	Inter. Diam.	Per Ft.
2¼ inch...	$2 70	3¾ inch...	$5 35	5¼ inch...	$8 00	7½ inch...	$13 50
2½ " ...	3 10	4 " ...	5 80	5½ " ...	8 50	8 " ...	15 00
2¾ " ...	3 55	4¼ " ...	6 25	5¾ " ...	9 00	9 " ...	17 50
3 " ...	4 00	4½ " ...	6 70	6 " ...	9 50	10 " ...	20 00
3¼ " ...	4 45	4¾ " ...	7 15	6½ " ...	10 75		
3½ " ...	4 90	5 " ...	7 60	7 " ...	12 00		

LEATHER SUCTION HOSE.

DOUBLE COVERS ON SPIRALLY WOUND GALVANIZED IRON.

3 inch, per foot........	$6 00
3½ " "	7 00
4 " "	8 50
4½ " "	9 50
5 " "	10 50
5½ " "	11 50
6 " "	12 50

UNLINED COTTON HOSE.

FOR CONDUCTING PURPOSES, TANKS, ETC.

Clean, odorless, and will stand as much pressure as any unlined hose.

Inter. Diam.		Inter. Diam.	
¾ inch, per foot........	$0 15	3 inches, per foot, extra heavy..	$0 50
1 " "	17	4 " " " ..	60
1¼ " "	18	5 " " " ..	70
1½ " "	20	6 " " " ..	75
1¾ " "	25	8 " " " ..	85
2 " " extra heavy....	32	10 " " " ..	95
2¼ " " "	38	15 " " " ..	1 25
2½ " " "	45		

Light hose for tanks, grain elevators, etc., from 4 to 7 in. diameter, 20 cents per foot.

Patent Carbolized "Smooth Bore" Rubber Suction Hose.

Inter. Diam.		Inter. Diam.	
2 inches, per foot........	$2 60	6 inches, per foot........	$10 50
2½ " "	3 50	6½ " "	12 00
3 " "	4 50	7 " "	13 50
3½ " "	5 50	7½ " "	15 00
4 " "	6 50	8 " "	16 50
4½ " "	7 50	9 " "	19 50
5 " "	8 50	10 " "	22 50
5½ " "	9 50		

RUBBER TUBING.

PLAIN. Inter. Diam.		CLOTH INSERTION. Inter. Diam.	
⅛ inch, per foot........	$0 07	⅛ inch, per foot........	$0 09
3/16 " "	12	3/16 " "	14
¼ " "	16	¼ " "	18
5/16 " "	18	5/16 " "	20
⅜ " "	20	⅜ " "	23
½ " "	25	½ " "	28
⅝ " "	30	⅝ " "	33
¾ " "	35	¾ " "	38
1 " "	45	1 " "	50

LINEN HOSE.

UNLINED AND SEAMLESS.

Inter. Diam.		Inter. Diam.	
1 inch, per foot........	$0 35	4 inch, per foot........	$1 10
1¼ " "	40	5 "	1 25
1½ " "	47	6 "	1 59
2 " "	65	7 "	1 89
2¼ " "	70	8 "	2 20
2½ " " N.Y. corp. size.	80	9 "	2 60
3 " "	85	10 "	3 00

RUBBER-LINED LINEN HOSE.

SEAMLESS AND CAPABLE OF GREAT RESISTANCE.

1½ inch diameter, per foot........	$0 88
2 " "	1 10
2¼ " "	1 25
2½ " " Fire Dep't size........	1 30
3 " "	1 60

ANTISEPTIC LINEN HOSE.

SPECIAL PRICE-LIST.

1 inch diameter, per foot........	$0 35
1¼ " "	40
1½ " "	47
1¾ " "	52
2 " "	65
2¼ " "	70
2⅜ " "	75
2½ " " N.Y. Corp'n size........	80
3 " "	85
4 " "	1 10
5 " "	1 25
6 " "	1 50
7 " "	1 80
8 " "	2 20
9 " "	2 60
10 " "	3 00

ANTISEPTIC RUBBER-LINED LINEN HOSE.

SPECIAL PRICE-LIST.

1¼ inch diameter, per foot........	$0 66
1½ " "	80
2 " "	1 10
2¼ " "	1 15
2½ " " Steamer size........	1 25

RIVETED COTTON HOSE.—Rubber Lined.

FOR STEAM AND HAND FIRE ENGINES, ETC.

Sustains 600 lbs. and		350 lbs. per square inch pressure.	
Inter. Diam.		Inter. Diam.	
2 inch, 4 ply, per foot........	$1 40	1½ inch, per foot........	$1 20
2¼ " " "	1 45	2 " "	1 30
2½ " " "	1 50	2¼ " "	1 35
		2½ " "	1 40

EUREKA FIRE HOSE, 2½ inches, per foot........ $1 20

THE BABCOCK FIRE EXTINGUISHER.

Fig. 171.

(Fig. 171.)

Improved Copper Extinguisher, with 6 sets charges $50 00
Improved Steel Extinguisher, with 4 sets charges........................ 30 00

THE CHAMPION FIRE EXTINGUISHER.

(Fig. 172.)

Extinguisher and 4 charges chemicals, $45 00
Extra charges, per box (four sets)......... 2 00

Fig. 172.

HOSE JACKET, OR REPAIRER.

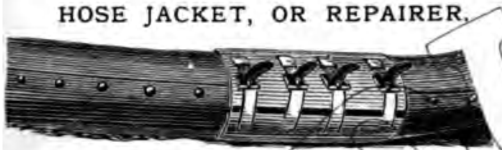


Fig. 173.

For repairing burst hose, *without stopping* the flow of the water. Suitable to all kinds of hose.

Each $2 00

GALVANIZED IRON PAILS,

Fig. 174.

With Patent Iron Bottom. These Pails are put together (in the black) of extra heavy material, after which they are galvanized, making the best article of the kind ever put upon the market.

	Per Dozen.		
Will hold qts.,	7	10	14
With Cover..		$14 00	17 00
Without " ..	$9 00	12 00	14 00

Fig. 175.

OAK PAILS.

Ordinary, per dozen......................... $
Heavy, " ....
Ex. Heavy, " ....
Either with plain or galvanized iron hoops.

Fig. 176.

FIRE BUCKETS.

(Fig. 176.)

Rubber, with Rubber Handle, per dozen.... $30 00
Leather, per dozen........................ 42 00
Leather, extra heavy, per dozen............ 48 00
Rubber, flexible, with Miller's Stiffened Bottom.................................. 30 00

PAPIER-MACHE PAILS.

Fig. 177.

Fig. 178.

No. 1, Light Pail, with Hoop at Bottom, Brass Ears and Bail.................per doz. $13 50
" 2, Heavy " " " Top and Bottom, Brass Ears and Bail........ " 16 50
" 3, Extra Heavy Pail, with Hoop at Bottom, heavy Iron Ears and Bail....... " 16 50
" 4, " " " " " Top and Bottom, heavy Iron Ears and Bail " 18 00

NOVELTY FOLDING PAILS.

Fig. 179.—Open.

Fig. 180.—Folded.

Neat, compact, convenient, and useful.

These Pails are made of enameled rubber cloth, coated on both sides, with top and bottom hoops supported by jointed side braces, mounted to correspond with carriage trimmings and harness.

Japanned Mountings, per dozen.................................. $27 00
Nickel " " 36 00

NOYES' CASTOR OIL HOSE DRESSING.

This Hose Dressing has been in use for several years. Its merits have become fully established, and it is now in use in a large number of Fire Departments. It prevents Hose from rotting, protects it from the action of the atmosphere by closing the pores of the leather, creates a waxy surface, and forms a coating upon the inside, after permitting sufficient oil to permeate the leather. Its consistency being always uniform, it does not congeal, and is always ready for use in any kind of weather. Neat's-foot oil should never be used in the oiler, as it congeals in cold weather and does not work well, oils the Hose very unevenly, and in warm weather is so thin that a too great quantity is absorbed by the leather. Full directions accompany each package.

Hose Dressing, per gallon.. $1 75

GUTTA-PERCHA.

Crude, per pound........... $2 00 | Chips, per pound............ $2 50

INDIA RUBBER BALLS, FOR VALVES OF STEAM PUMPS.

1 inch diam., per doz.	$0 95	2¼ inch diam., per doz.	$7 25
1⅛ " " "	1 35	2½ " " "	9 00
1¼ " " "	1 75	2¾ " " "	12 00
1⅜ " " "	2 25	3 " " "	15 00
1½ " " "	2 75	3½ " " "	23 00
1⅝ " " "	3 25	3¾ " " "	28 00
1¾ " " "	4 25	4 " " "	32 00
1⅞ " " "	5 25	4½ " " "	50 00
2 " " "	6 25	5 " " "	68 00

PURE RUBBER CEMENT.

No. 3, Half Pints, per doz.................................... $4 80
" 2, Pints, " 9 60
" 1, Quarts, " 18 00

BALANCED HOSE CART AND REEL.

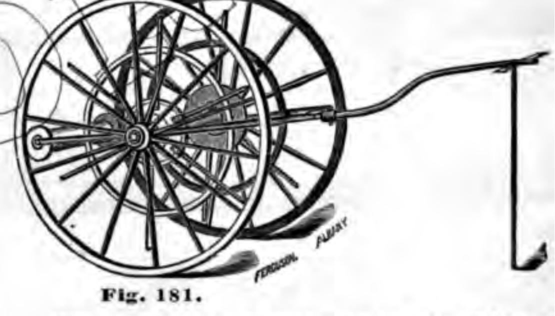


Fig. 181.

The above cut is a representation of a Balanced Hose Cart, with wheels 36 inches in diameter, all wrought iron frame and hose reel, of sufficient capacity to carry 300 feet 1½ inch, or 200 feet 2 inch hose.

Price.................................. $80 00 and up.

Hose Reels, for factories, to order.

HOSE COUPLINGS, ETC.

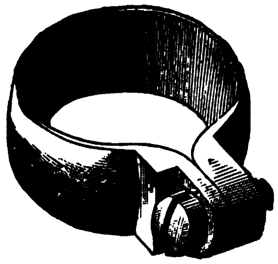


Fig. 182.

HOSE BANDS, with Screw.

(Fig. 182.)

Size	¾	1	1¼	1½	2
Price, each	.22	25	30	35	46 cents.

RATH'S PAT. HOSE BANDS.

(Fig. 183.)

Size	½	¾	1	1¼	1½	2	2¼	2½
Per doz.	$0 75	0 75	1 50	2 00	2 50	3 30	4 25	4 25

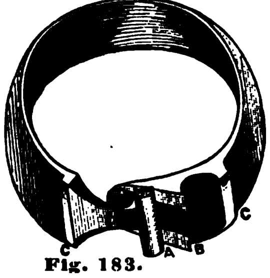


Fig. 183.

Fig. 184.

Size	½	¾	1	1¼	1½	1¾	2	2¼	2½
Price, per doz.	$0 50	0 75	1 00	1 50	2 00	2 50	3 00	3 50	4 00

HAND CLAMPS for same, $2 00 each. VISE CLAMPS, ½ to 1 inch, $12 00 per doz.

Fig. 185. CLOSED.

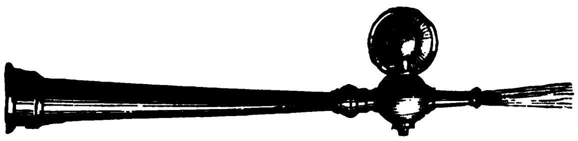


Fig. 186. FULL STREAM.

Fig. 187. SPRAY.

THREE WAY HOSE PIPES.

PATENT

(Figs. 185, 186, and 187.)

Three-Way, ¾ inch........ $2 00
" " 1 " 2 25

Fig. 188. SPRAY.

SLIDE HOSE PIPES.

PATENT.

(Fig. 188.)

Slide Hose, ¾ inch.......... $1 75
" " 1 " 1 85

HOSE PIPES.

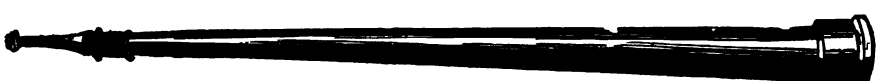


Fig. 189. PLAIN, SOLDERED TIP.

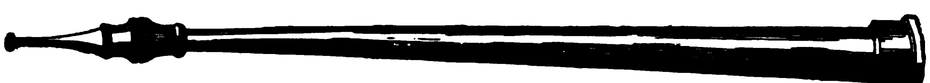


Fig. 190. PLAIN SCREW TIP.

Fig. 191. COCK ON SMALL END.

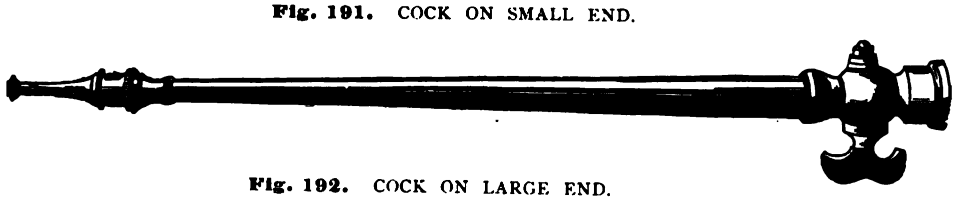


Fig. 192. COCK ON LARGE END.

Size		¾	1	1¼	1½	1¾	2	2¼	2½
Short, Plain	per doz.	$7 00	8 00	15 00	21 00		27 00		36 00
" Screw Tip	"	9 00	11 00						
" Cock on small end	"	14 00	20 00						
" " large "	"	16 00	22 00						
Long, Screw Tip	"	18 00	24 00	30 00	42 00	48 00	60 00	94 00	114 00
" Soldered Tip	"	12 00	18 00	27 00	36 00				
" Cock on small end	"	24 00	33 00	50 00	57 00	72 00	84 00		
" " large "		27 00	36 00	54 00	66 00	80 00	96 00		

Fig. 193.

COMMON—FOR RUBBER HOSE.

(Fig. 193.)

Size	½	¾	⅞	1	1¼	1½	1¾	2	2¼	2½	3
Per doz.	$3 50	3 50	7 00	7 00	15 00	21 00	24 00	33 00	36 00	50 00	60 00

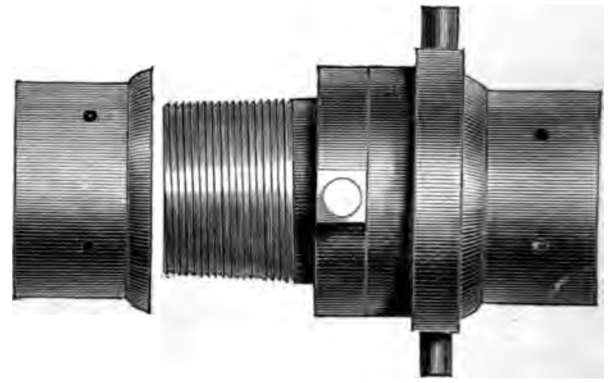


Fig. 194.

WITH BAND, FOR LEATHER OR LINEN HOSE.

Size	1½	2	2¼	2½	3 inches.
Price, per doz.	$27 00	39 00	50 00	60 00	80 00

Fig. 195.

WITH CLAMPS, FOR RUBBER HOSE.

Size	2¼	2½	3 inches.
Price, per doz.	$50 00	60 00	80 00

FIRE HOSE COUPLINGS.

Size, 2½ inches.

Allen's Patent Screw Coupling, per doz.	$78 00
Gaylord " " " "	84 00
Eccentric " " " "	96 00
Feyhs " " " "	96 00
Jones " " " "	120 00
Kennedy's " " " "	78 00

INGERSOLL'S PATENT COUPLINGS.

FOR ROCK DRILLS.

Price, per pair, ¾ inch.......... $3 00
" " 1 " 3 25

WROUGHT IRON SPANNER.

PLAIN OR GALVANIZED.

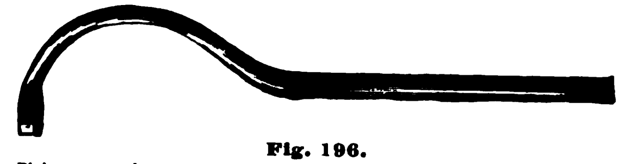


Fig. 196.

Plain, per doz.......... $9 00
Galvanized, " 12 00

HOSE AND PIPE NIPPLE.

To Connect Hose to Pipe Thread.

Fig. 197.

Size........	½	¾	1	1¼	1½	2	2½	3	3½	4
Price, each,	$0 45	0 50	0 60	0 80	1 00	1 20	2 25	3 50	4 50	5 50

HOSE CAP AND COCK.

Fig. 198.

Hose Caps, with Chain.

(Fig. 198.)

Size..................................	¾	1	1¼	1½	2	2½
Price, each............................	$1 00	1 50	1 75	2 25	2 75	3 50
Rough, without Chain or Swivel........	50	75	90	1 25	1 50	2 00

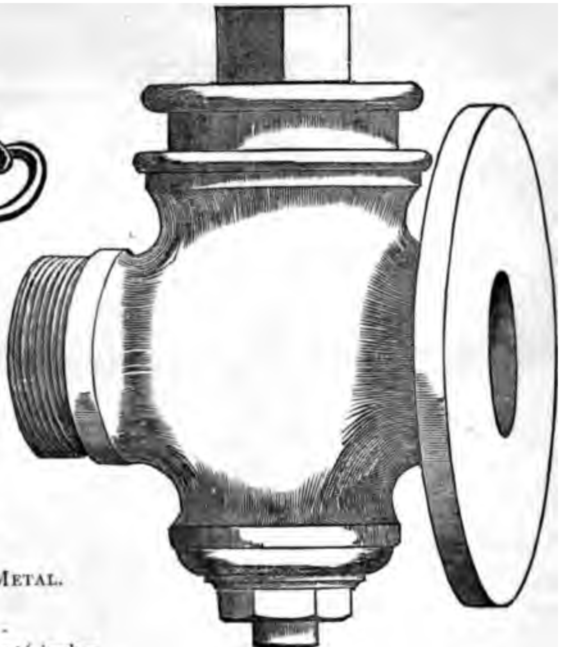


Fig. 199.

Hose Cocks, Steam Metal.

(Fig. 199.)

Size..............	2¼	2½ inches.
Price, each......	$16 00	20 00

Fig. 200.

PATENT RUBBER COMBINATION HOSE PIPE AND SPRINKLER.

With Stop Cocks.

1 box, 10 pipes, ¾ inch............................net, $6 00
1 " 10 " 1 " .... " 9 00

LEATHER HOSE PIPES.

Leather, with Nozzle and Screw Butt, each.................$11 00
Leather, for ship use.. 4 00

BOYD'S PATENT RIVETED COTTON HOSE PIPES.

36 in., complete with Butt and Tip (Caswell's Patent), each, $15 00
48 " " " " " " " " 18 00

CASWELL'S PATENT FOR COTTON AND LINEN HOSE.

2 inches, per doz...............$65 00
2½ " " 72 00

HOSE VALVE.—Steam Metal.

Fig. 203.

Size.	2	2¼	2½ in
Price, each...	$16 00	20 00	23 00

Fig. 201.

SPRINKLERS.

(Fig. 201.)

1½ inch, for ¾ and 1 inch Hose Pipes, per doz..........$5 00
2 " ¾ " 1 " " " " 8 00
3 " ¾ " 1 " " " " 12 00
With Nipple for Rubber Hose add......................... 1 50

HOSE NOZZLES.

To Tie on.

(Fig. 202.)

Size..........	½	¾	⅞	1	1¼	1½ inches.
Per doz.......	$5 00	6 00	6 00	8 00	9 00	12 00

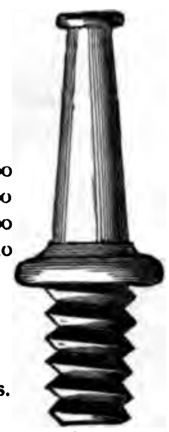


Fig. 202.

ROUGH STOPS.

Per Dozen

	¼	⅜	½	⅝	¾	1	1¼	1½	1¾	2	2¼	2½	3	3½	4
Rough Stops, Lever Handle..........................	$9 00	$9 00	$11 00	$13 00	$15 00	$24 00	$40 00	$50 00	$84 00	$96 00	160 00	180 00	225 00	300 00	550 00
" " for Lead and Iron Pipe..............		12 00	14 00	16 00	18 00	27 00									
Round Way Stops, T or Lever Handle............			15 00	18 00	24 00	39 00	60 00	72 00							
" " " " " with Waste.			16 50	19 50	25 50	41 00	63 00	75 00							
Rough Stop, T Handle, with or without Waste.....		8 50	9 00	10 50	12 50	21 00	33 00								
Rough Stop, T Handle, Nut and Washer Bottom...	9 00	9 00	11 00	13 00	15 00	24 00	40 00	50 00		96 00					
Rough Stop and Waste, T or Lever Handle........		10 00	12 00	14 00	16 00	25 00	42 00								
Hose Stops for Lead or Iron Pipe................					24 00	33 00	60 00	75 00	115 00	136 00	180 00		300 00		
Rough Stops, T or Lever Handle, screwed.........	12 00	14 00	16 00		21 00	30 00	50 00	63 00		117 00					
Rough Stops, T or Lever Handle, screwed, one end for Lead and the other for Iron Pipe....	11 00	12 00	14 00		18 00	27 00	45 00	56 00		106 00					
Rough Stop and Waste, T or Lever Handle, for Iron Pipe..................................		15 00	18 00		24 00	33 00	54 00								
Round Way Stops, T or Lever Handle, for Iron Pipe,		18 00	21 00		30 00	45 00	66 00	84 00		164 00					
Round Way Stops and Waste for Iron Pipe, T or Lever Handle..............................		19 00	22 00		31 00	46 00	68 00								

ROUGH STOPS FOR WATER.

For Prices see Preceding Page.

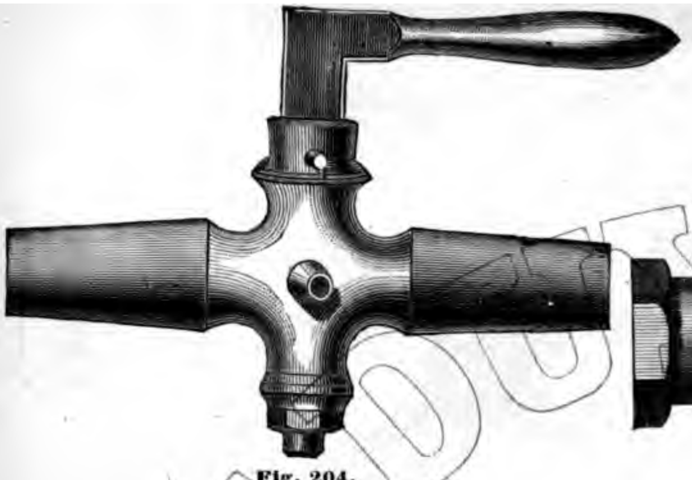


Fig. 204.

Fig. 205.

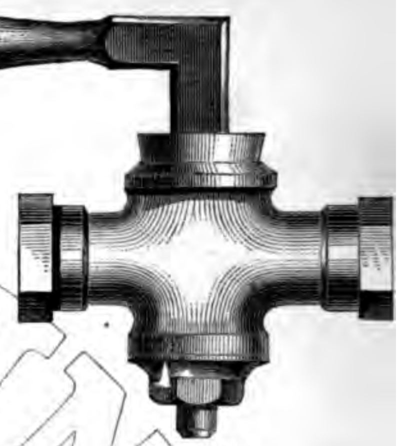


Fig. 206.

BIBBS FOR WATER.

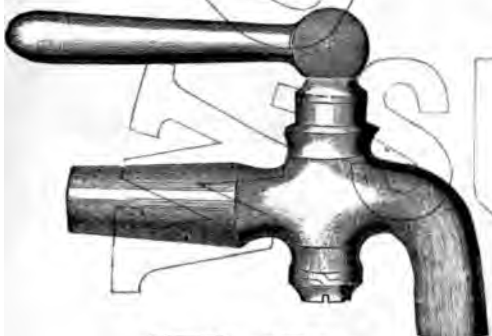


Fig. 207.—Plain Bibb.

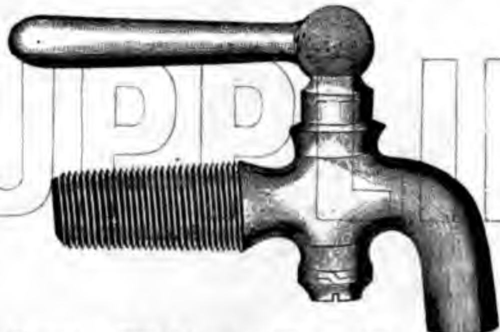


Fig. 208.—Plain, Screw Tail.

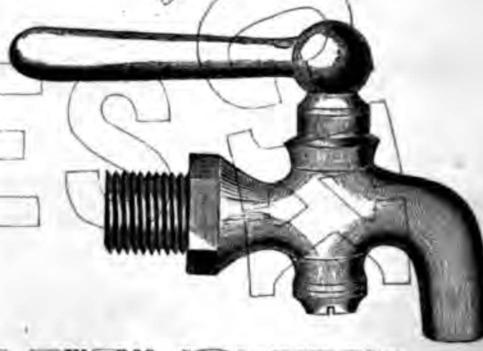


Fig. 209.—Plain Bibb for Iron Pipe, Screw Shank and Shoulder.

Fig. 210.—Hose Bibb, for Iron Pipe.

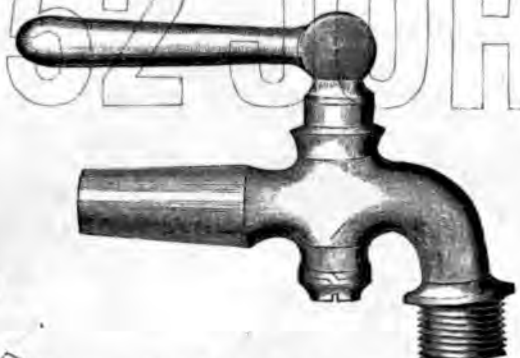


Fig. 211.—Hose Bibb.

Fig. 212.—Plain Bibb, Flange and Thimble.

Fig. 213.—Hose Bibb, Flange and Thimble.

Per Dozen. Size.	¼	⅜	½	⅝	¾	1	1¼	1½	1¾	2	2¼	2½	3
Plain Bibbs, finished	$11	$12	$13 50	$16	$20	$28	$50	$65	$100	$115	$200	$220	$300
" " Rough	9	10	11 50	14	18	25	44	58	84	96	160	180	225
" " Fire Plated	24	27	30 00	36	44	60							
" " Nickel "	18	20	22 50	27	33	45							
Plain Bibbs, Screw Tail, Finished	13	14	16 00	20	24	33	56	72	108	132		234	315
" " " Rough	11	12	14 00	18	22	30	50	65	92	113		216	300
Plain Bibbs, for Iron Pipe, no Shoulder, Finished			14 50	17	21	30							
" " " " " Rough			12 50	15	19	27							
" " " " " Fire Plated			31 00	37	45	62							
" " " " " Nickel Plated			24 00	28	34	46							
Plain Bibbs, for Iron Pipe, Screw Shank and Shoulder, Finished,	14	15	16 00	20	24	33	60	75		136			
" " " " " " Rough	12	13	14 00	18	22	30	54	68		118		192	276
Plain Bibbs, Flange and Thimble, Finished			22 00	26	30	40							
" " " " Fire Plated			44 00	52	60	80							
" " " " Nickel Plated			33 00	39	45	60							
Hose Bibbs, for Iron Pipe, no Shoulder, Finished			17 00	21	25	34							
" " " " " Rough			15 00	19	23	31							
" " " " " Fire Plated			34 00	41	49	67							
" " " " " Nickel Plated			26 00	31	37	51							
Hose Bibbs, for Iron Pipe, Screw Shank and Shoulder, Finished			21 00	24	28	38	70	85		156			
" " " " " " Rough			19 00	22	26	35	64	78		138		204	
Hose Bibbs, Flange and Thimble, Finished			24 00	28	34	44							
" " " " Fire Plated			48 00	56	68	88							
" " " " Nickel Plated			36 00	42	51	66							

BIBBS FOR STEAM.

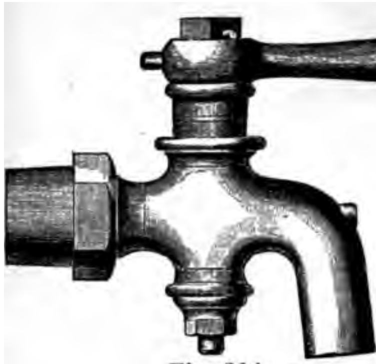


Fig. 214.

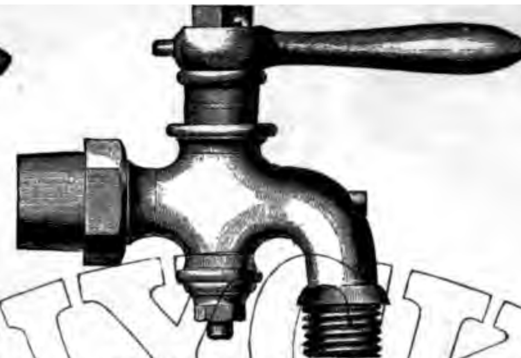


Fig. 215.—Screw Nozzle.

Fig. 216.—Flanged.

Size, inches	¼	⅜	½	⅝	¾	1	1¼	1½	1¾	2	2½	3	3½	4
Ordinary, Finished ... per doz.	$16 00	18 00	21 00	25 00	33 00	45 00	65 00	90 00		130 00	216 00	324 00		
" Rough ... "	14 00	16 00	18 00	22 00	30 00	42 00	57 00	80 00		118 00	204 00	300 00		
Screw Nozzle, Finished ... "	18 00	21 00	25 00	32 00	40 00	51 00								
" " Rough ... "	16 00	18 00	22 00	28 00	36 00	48 00								
With Coupling, Finished ... "	20 00	24 00	30 00	36 00	44 00									
" " Rough ... "	18 00	21 00	27 00	33 00	40 00									
With Flange, Finished ... each,						6 00	8 00	10 00	13 00	18 00	25 00	35 00	48 00	65 00
" " Rough ... "						5 00	7 00	9 00	11 00	16 00	22 00	30 00	42 00	60 00

STEAM STOPS.

Per Dozen.

Size, inches	¼	⅜	½	⅝	¾	1	1¼	1½	1¾	2
Single Coupling, Fin.,	$21 00	24 00	30 00	36 00	42 00	57 00	78 00	120 00	141 00	152 00
" " Rough,	18 00	22 00	27 00	33 00	39 00	50 00	69 00	108 00	129 00	132 00
Double " Fin.,	22 00	27 00	33 00	39 00	45 00	72 00	96 00	136 00	155 00	175 00
" " Rough,	20 00	24 00	30 00	36 00	42 00	63 00	87 00	126 00	144 00	160 00
Bent " Fin.,	24 00	27 00	33 00	40 00	48 00	63 00				
" " Rough,	21 00	24 00	30 00	36 00	42 00					

Fig. 217.—Single Coupling.

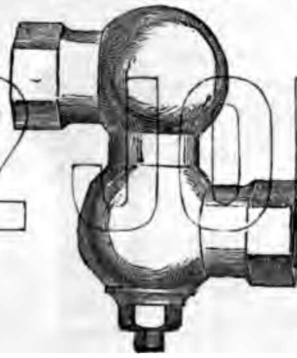


Fig. 218.

SWING JOINTS,

FOR STEAM PIPE.

Size, inches,	⅜	½	¾	1	1¼	1½	2
Rough, each,	$1 75	2 00	2 50	3 50	5 00	7 00	12 00

STEAM COCKS.

Each.

Fig. 219.—Flat Head.

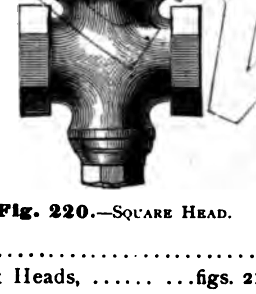


Fig. 220.—Square Head.

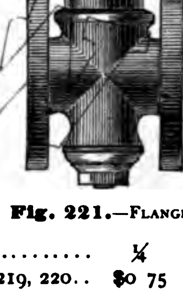


Fig. 221.—Flanged.

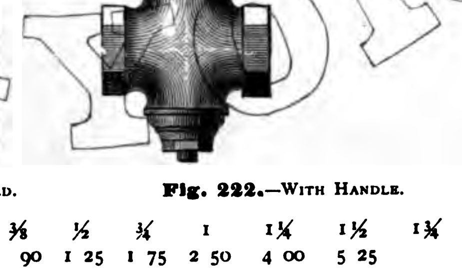


Fig. 222.—With Handle.

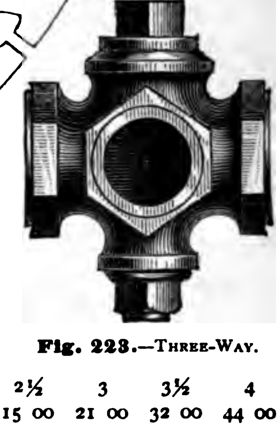


Fig. 223.—Three-Way.

Size, inches	¼	⅜	½	¾	1	1¼	1½	1¾	2	2½	3	3½	4
Steam Cocks, Square or Flat Heads, ... figs. 219, 220	$0 75	90	1 25	1 75	2 50	4 00	5 25		7 50	15 00	21 00	32 00	44 00
" " " " Extra Heavy			1 75	2 50	3 50	5 60	7 35		10 50	20 00	30 00		
" " " " Flanged, fig. 221					6 00	8 00	10 00	12 00	14 00	21 00	32 00	48 00	74 00
Three-Way Cocks, " " Heavy, " 223			2 00	3 00	4 00	6 50	8 00		12 50	25 00	35 00		
" " " " Flanged						12 00	15 00		22 00	44 00	60 00		
Diameter of Flanges, inches (Standard Sizes)					4	4½	5	5½	6	7	7½	9	10
Distance between Faces of Flanges, inches (Standard Sizes)					4¼	5⅛	6	6½	7	8	9	9½	10⅜

(For Iron Cocks, see page 48.)

C. DUYCKINCK SUPPLIES 50 & 52 JOHN ST. NEW YORK.

CHECK VALVES.

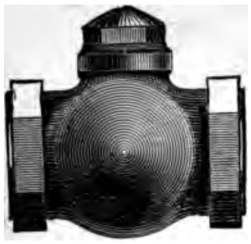


Fig. 224. HORIZONTAL.

Fig. 225. VERTICAL.

Fig. 226. VERTICAL. CAP ON SIDE.

Fig. 227. ANGLE.

Size, inches.......	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4
Hori. or Angle, ea.,	$0 75	75	1 00	1 25	1 75	2 75	3 50	6 00	13 00	16 00		
Vertical...........			1 00	1 10	1 50	2 50	3 25	5 50	10 00	15 00		
" Cap on Side			1 30	1 60	2 25	3 50	4 50	7 00	14 00	18 00		
Iron Body, Screwed,							3 00	5 00	8 00	12 00	16 00	32 00
" " Flanged,								6 00	9 00	13 00	18 00	25 00

IMPROVED LOWER CHECK VALVE,

WITH STRAINER ATTACHED.

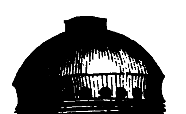


Fig. 237.

Fig. 238.

Fig. 239.

Figs. 237, 238, 239 show our Improved Lower Check or Foot Valve, designed for the lower end of the suction pipes to pump, where it is desired to keep up the column of water, and there is no danger of its freezing. We can furnish these suitable for any of the following sized pipes, namely: 1, 1¼, 1½, 1¾, 2, 2½, and 3 inches.

	Iron.	Brass.	Galvanized.	Iron, thread tapped in for iron pipe without the brass tube and coupling.
1 inch, each....	$2 00	$2 75	$2 25	$1 25
1¼ " "	2 25	3 50	2 50	1 50
1½ " "	2 50	4 25	3 00	1 75
1¾ " "	2 75	4 50	3 25	2 00
2 " "	3 00	5 00	3 50	2 25
2½ " "	3 50	6 00	4 00	2 75
3 " "	4 50	7 00	5 00	3 75

PUMP VALVES.

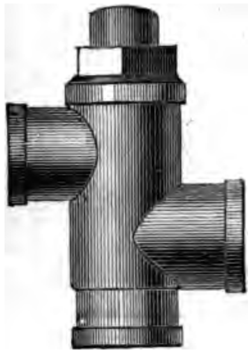


Fig. 228.

Fig. 229. WITH AIR CHAMBER.

Fig. 230. WITH AIR COCK AND AIR CHAMBER.

Size, inches..........	½	¾	1	1¼	1½
No. 1, fig. 228, each..	$2 50	3 50	4 50	6 00	10 00
" 2, " 229, " ..	3 75	4 50	6 00	8 00	12 00
" 3, " 230, " ..	4 50	5 25	6 75	9 00	13 00

IMPROVED STRAINER AND REST,

(Fig. 231.)

For the lower end of Iron Suction Pipe, making a nice Strainer, Rest, and Steadier for the same.

Suitable for.	Iron, for Pipes.	Brass, for Suction Hose.
1¼ in. calibre Iron Pipe, each....	$0 75	$1 25
1½ " " " "	87	1 50
2 " " " "	1 12	2 50
2½ " " " "	1 35	3 50
3 " " " "	1 75	5 00

Fig. 231.

Fig. 232. FOOT VALVE WITH STRAINER.

FOOT VALVES AND STRAINERS.

(Fig. 232.)

Size, inches,	¾	1	1¼	1½	2	2½	3	3½	4	5	6
Brass, for I. P., each	$2 50	3 00	4 00	6 00	7 50						
Brass, for L. P., each	2 50	3 00	4 00	6 00	7 50						
Iron Valve,	1 75	1 75	2 50	3 00	3 50	4 50	5 50	7 00	9 00	15 00	25 00

IMPROVED CHECK VALVE.

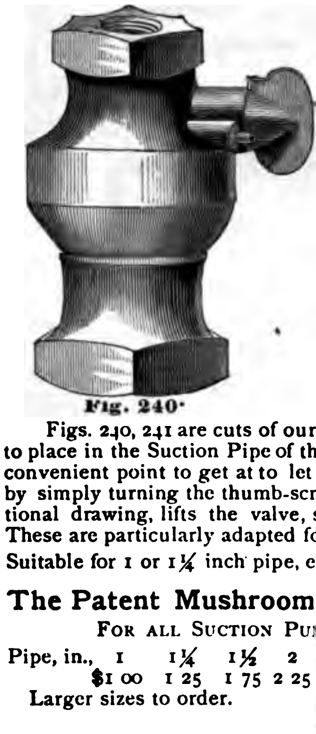


Fig. 240.

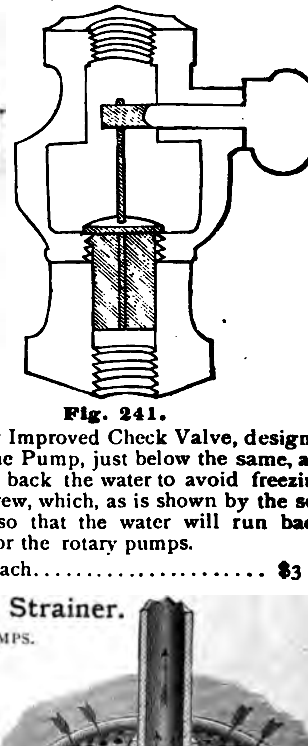


Fig. 241.

Figs. 240, 241 are cuts of our Improved Check Valve, designed to place in the Suction Pipe of the Pump, just below the same, at a convenient point to get at to let back the water to avoid freezing, by simply turning the thumb-screw, which, as is shown by the sectional drawing, lifts the valve, so that the water will run back. These are particularly adapted for the rotary pumps.

Suitable for 1 or 1¼ inch pipe, each...................... $3 00

The Patent Mushroom Strainer.

FOR ALL SUCTION PUMPS.

Pipe, in.,	1	1¼	1½	2
	$1 00	1 25	1 75	2 25

Larger sizes to order.

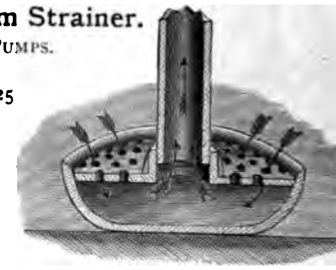


Fig. 242.

CHECK VALVE.

(Fig. 233.)

Fig. 233 shows our Improved Check Valve, suitable to place at any point in the suction pipe of pump, for sustaining or keeping up the column of water in same; arranged for either iron or lead pipe.

	Iron.	Brass.	Galvanized.	Iron thread tapped in for iron pipe, without brass tube and coupling.
1 inch, each....	$2 25	$3 25	$2 50	$1 50
1¼ " "	2 50	4 25	2 75	1 75
1½ " "	2 75	5 00	3 25	2 00
2 " "	3 25	6 00	3 75	2 50
2½ " "	3 75	7 00	4 25	3 00
3 " "	5 00	8 50	5 50	4 25

Fig. 233.

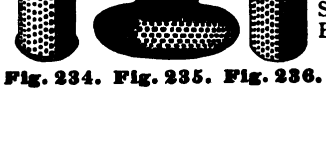


Fig. 234. Fig. 235. Fig. 236.

SUCTION BASKETS.

(Figs. 234 and 236.)

Size, inches.......	1	1¼	1½	2	2½	3
Iron, each........	$0 75	90	1 00	1 25	1 75	2 50

Size, inches,	1½	2	2¼	2½	3	3½	4	5	6	7	8
Brass, each,	$4 00	5 00	6 00	7 00	10 00	13 00	17 00	20 00	30 00	40 00	60 00

Fig. 235 to order.

FITTS' PATENT GOVERNOR AND STOP VALVES.

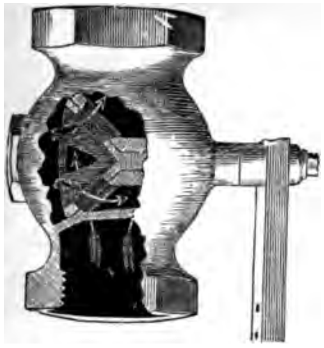


Fig. 243.

Fig. 243 represents the CHRONOMETER GOVERNOR VALVE. The ports in this valve are so arranged as to bring the pressure of steam on both sides of it, thereby relieving it of all friction in moving on its seat. And as no packing around the stem or elsewhere is necessary, it is superior for this purpose to any other ever offered to the public.

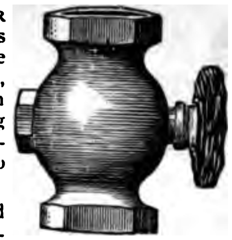


Fig. 244.

Fig. 244 is a STOP VALVE, and is adapted to any purpose for which such are required, either for steam, water, gas, or air. It has been used in various parts of the country, for the last six years, and has never failed to give entire satisfaction, more especially where a *high pressure of steam* is used.

IRON BODIES.

Size	¾	1	1¼	1½	2	2½	3	4	5	6 inches.
Chronometer	$5 50	8 00	11 00	15 00	20 00	25 00	35 00	60 00		120 00
Stop		4 00	5 00	7 50	11 00	15 00	20 00	35 00	75 00	

IMPROVED REGISTER VALVE.

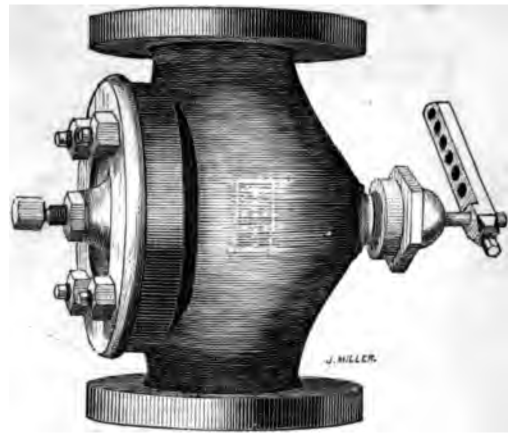


Fig. 245.

It is used extensively in Saw-Mills, as a Sawyer's Valve, to stop and start the engine by a cord running to the sawyer.

Size	1½	2	2½	3	3½	4	5 in
Diam. of Flanges,	5½	6	7	8	9	10	11
Length	7	8½	9	12	13	14	16
Price	$10	13	17	23	27	33	44

IRON THROTTLE VALVES.

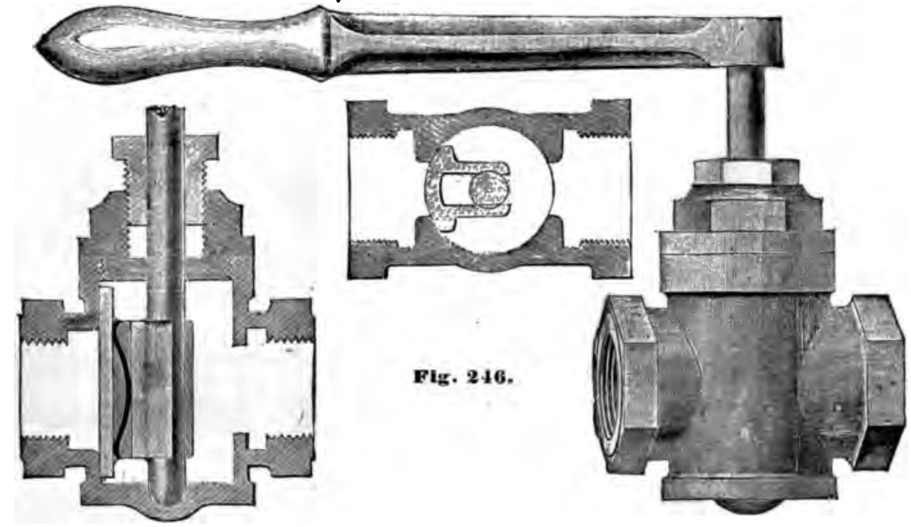


Fig. 246.

Size	1	1¼	1½	2	2½ inches.
Price, each	$8 75	10 00	11 25	16 25	25 00

BALANCE OR GOVERNOR VALVE.

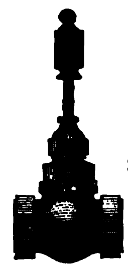


Fig. 247.

BRASS.

Size	1	1¼	1½	2 in.
Price, each	$4 00	5 25	7 00	13 00

BUTTERFLY VALVE.

Size	1¼	1½	2	2½	3 in.
Comp't'n,	$4 50	5 00	7 50	12 00	16 00
Iron	2 50	3 00	4 50	6 00	9 00

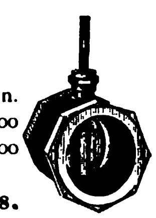


Fig. 248.

BACK PRESSURE VALVES.

(Fig. 249.)

Fig. 249.

Size	2	2½	3	3½	4	5	6	8 inches.
Screwed Ends, each	$10 00	14 00	16 00	20 00	23 00	33 00	43 00	
Flanged " "	11 00	15 00	18 00	22 00	25 00	35 00	45 00	

BACK PRESSURE VALVE, WITH SPRING.

(Fig. 250.)

Size	2	2½	3	3½ inches.
Price	$12 00	16 00	22 00	30 00

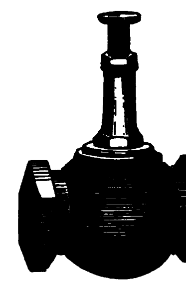


Fig. 250.

AIR VALVES.

FULL SIZE. IRON PIPE THREAD.

(Figs. 251 and 253.)

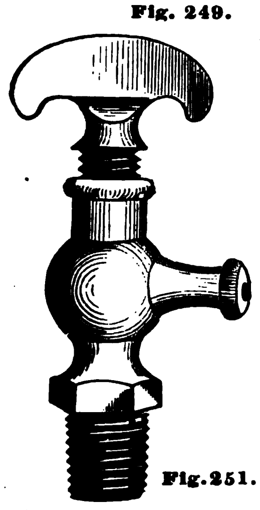


Fig. 251.

⅛ or ¼ in. $9 per doz.

Fig. 252.

VACUUM VALVE.

(Fig. 252.)

¼, ⅜, and ½ inch.

Each, $1 00

Fig. 253. ⅛ or ¼ in. $7 50 per doz.

LOW PRESSURE SAFETY VALVE.

(Fig. 254.)

Size	1	1¼	1½ in.
Price	$2 75	3 25	4 00

Fig. 254

SAFETY VALVES.

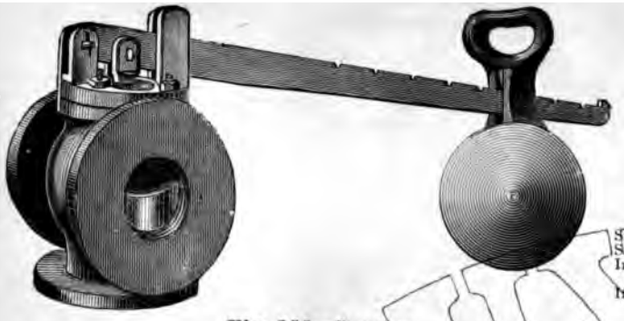


Fig. 255.—Flanged.

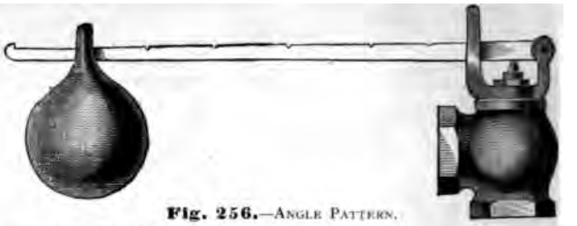


Fig. 256.—Angle Pattern.

Size, inches	½	¾	1	1¼	1½	2	2½	3	3½	4	5	6
Steam Metal, Screwed Ends, each	$3 00	4 00	5 00	7 00	9 00	12 00	20 00	35 00				
Iron Body, Brass Mounted, " " Screwed Ends				4 25	5 75	8 25	14 00	20 00	28 00	33 00	48 00	63 00
Iron Flanges, Brass Seat, " " Diam. of Flange, ins.						10 00	16 00	22 00	30 00	38 00	50 00	68 00
						6½	7	8	9	10	11	12

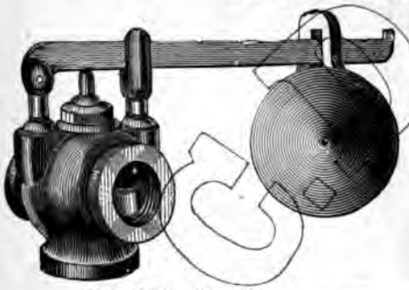


Fig. 257.—Globe Pattern.

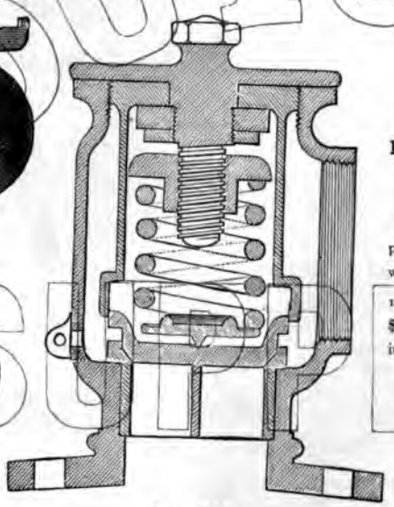


Fig. 258.

ASHTON'S PATENT INSULATED LOCK SAFETY VALVE.

In ordering the Insulated Valve, please state the size of boiler and working pressure of steam.

1½ in., $25 00—2 in., $30 00—2½ in., $40 00—3 in., $55 00—4 in. $70 00—5 in., $85 00—Locomotive size, $60 00.

Other sizes on application.

Fig. 259.

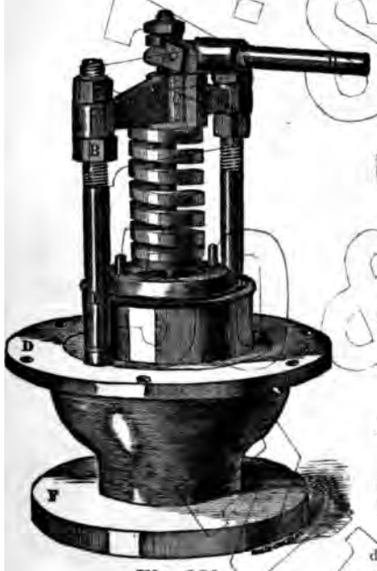


Fig. 260.

ASHCROFT'S PATENT NICKEL-SEATED SAFETY VALVE.

(Fig. 260.)

1	1¼	1½	2	2½	3	3½	4	4½	5	5½	6
$35 00	40 00	45 00	50 00	60 00	100 00	125 00	150 00	175 00	200 00	225 00	250 00

Steam Fire Engine Safety Valve, Nickel-Seated, 2¼ inches $55 00

Ashcroft's Patent Nickel-Seated "Pop" Safety Valve, for Locomotives, 2¼ inch, per pair 65 00

RICHARDSON PATENT LOCK SAFETY VALVE.

FOR LOCOMOTIVE BOILERS.

With Royalty, 2¾ inch, a single Valve ..... $55 00 | If Pairs are used, per pair $65 00

One order for six, each ..... 50 00 | If six Pairs are used, " 60 00

FOR STEAMBOAT AND STATIONARY BOILERS.

1 inch	$30 00	2½ inch	$43 75
1½ "	35 00	3 "	55 00
2 "	38 50	3½ "	66 00
4 inch	$66 00
5 "	125 00
6 "	150 00

Parties wishing Valves should state the horse power of the boilers to which they are to be applied, and the highest pressure the boilers are desired to carry.

Fig. 261.

LEVER AND CAM VALVE,

FOR STEAM, WATER, GAS, ETC.

Best Steam Metal, Screw Sockets.

¾	1	1¼	1½	2	2½
$1 50	1 75	2 75	3 75	5 75	10 00

Iron Valves, Brass Mounted.

	Screw Sockets.	Flange Ends.
2½ inch	$9 00	$10 00
3 "	12 50	13 50
4 "	16 50	17 50

2½ " with Fire Department Thread and Cap, and Spanner Combined $10 00

2½ inch, with Fire Department Thread, Cap, Spanner, Y, and Union Flange Combined $12 50

Fig. 262.

SUCKING SUPPLIES
D&S2 JOHN ST.
NEW YORK

GLOBE, ANGLE, AND CROSS VALVES.

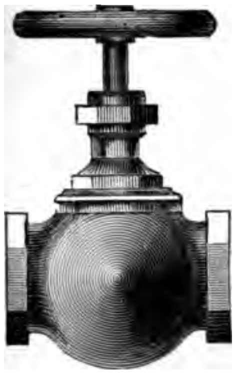


Fig. 263.—Globe Valve.

Fig. 264.—Angle Valve.

Fig. 265.—Cross Valve.

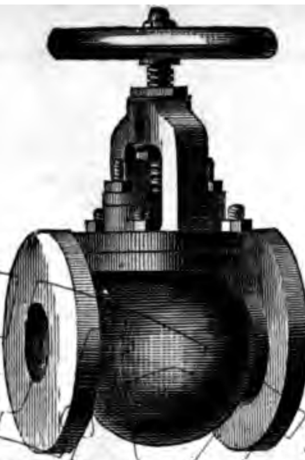


Fig. 266.—Flanged Globe Valve, with Yoke.

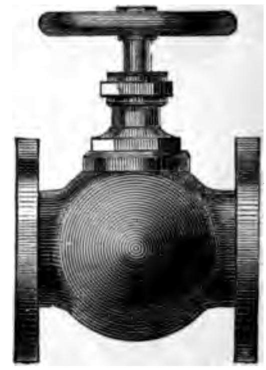


Fig. 267.—Flanged Globe Valve.

STEAM METAL.

Size	⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4 inches.
Globe or Angle, Screwed	$0 90	0 90	1 00	1 35	1 85	2 50	3 50	4 75	7 35	14 00	20 00	33 00	50 00
" Extra Heavy, "			1 50	2 00	2 75	3 75	5 25	7 00	11 00	20 00			
Cross, "				1 65	2 25	3 00	4 25	5 70	9 75	16 75	24 00		
Globe, Flanged						5 00	8 00	11 00	16 00	23 00	32 00	50 00	70 00
Angle, "							9 00	12 00	17 00	25 00	34 00	52 00	75 00

IRON BODY, BRASS MOUNTED.

Size	1	1¼	1½	2	2½	3	3½	4	5	6	8 inches.
Globe or Angle Screwed	$3 00	3 25	4 25	6 00	9 00	13 00	19 00	24 00	35 00	48 00	
" " Flanged	3 50	4 00	5 00	7 00	11 00	15 00	21 00	27 00	38 00	50 00	100 00
Cross, Screwed			5 50	7 50	11 50	16 00	22 00	30 00	44 00	60 00	
" Flanged			6 25	8 75	13 75	18 00	25 00	36 00	50 00	65 00	
Globe, with Yoke Screwed						15 25	19 50	23 75	35 50	46 50	
" " " Flanged						17 00	21 25	26 50	38 50	50 00	100 00
Standard Diameter of Flanges		5	5½	6½	7	8	9	10	11	12	14 inches.
" Distance between Faces		4½	5	6	7½	8	9½	11	12	13⅜	18 "

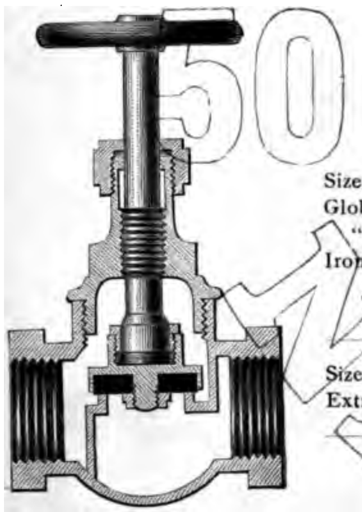


Fig. 268.

JENKINS' PATENT COMPRESSIBLE VALVES.

WITH COMPOSITION DISK.

Size of Pipe	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	5	6	8 in.
Globe and Angle Valves, Scrw'd Ends,	$1 65	1 90	2 20	3 00	3 95	5 75	7 60	11 30	22 00	32 00					
" " " Flanged "					6 40	9 00	12 00	16 50	28 00	38 00					
Iron Body, Brass Mounted, Scrw'd Ends,						6 00	7 25	9 60	15 00	20 00	30 00	34 00			
" " " Flanged "						7 00	8 50	11 00	16 00	21 50	31 50	36 00	58 00	75 00	125

Size	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	5	6	8	10 in.
Extra Disks	$0 10	12	15	18	20	30	40	60	80	1 00	1 25	1 50	2 00	2 50	3 50	4 50

RUSSELL'S PATENT VALVES.

WITH COMPOSITION DISK.

Size, inches	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	5	6
Globe and Angle Valves Screwed, Brass, each	$1 90	2 00	2 50	3 50	5 00	6 50	10 00	21 00	30 00				
Iron Body Brass Mounted, " "					6 00	7 00	9 00	15 00	20 00	30 00	36 00	50 00	
" " " Flanged "						8 00	10 00	16 00	21 00	31 00	37 00	54 00	72 00
Extra Disks	0 12	15	18	20	30	40	60	80	1 10	1 25	1 50	2 00	2 50

Russell's Patent Straightway or Gate Valve.

Size	¾	1	1¼	1½	2	2½	3	3½	4	5	6
Brass	$1 65	2 30	3 25	4 65	6 75	13 50	19 50				
Iron Body / Flanged or Spigot						11 00	14 50	18 50	21 00	27 50	33 00

Russell's Patent Gate Valve.

WITH PATENT COMPOSITION DISK.

Size	¾	1	1¼	1½	2	2½	3
Brass	$2 00	2 75	4 00	5 50	7 75	15 00	21 00
Iron Body, Flanged or Spigot						12 50	16 00

EDDY PATENT OPEN-WAY VALVE.

In ordering Valves, please be particular to state the kind required, and in every instance give number of class to which it belongs, thus insuring accuracy in filling orders.

Fig. 269.

LIST OF CLASSES.

1. Brass Valves, Screw Ends.
2. Iron Valves, Brass Mounted. All Iron Valves, and Valves with Iron Faces, Screw or Flanged Ends.
3. Light All-Iron Gas Valves, Hub Ends.
4. Heavy Valves for Water Mains, Hub Ends. Extra Flange Valves.
5. Quick-Opening Valves, Iron, Brass Mounted, Screw or Flange Ends.
6. Quick-Opening Brass Valves, Screw Ends.

Fig. 269. Iron Valve, Brass Mounted, Flange Ends.

Fig. 270. Iron Valve, Brass Mounted, Hub Ends, for Water or Gas Mains.

Fig. 271. Quick-Opening, Sliding Stem Valve.

Figs. 272, 273. All Brass or Iron Body, Brass-Mounted Valve, Screwed Ends.

Fig. 270.

BRASS VALVES, BEST STEAM METAL.

CLASS I.—(Figs. 272, 273.)

ALL HAVE DOUBLE GATES.

Size, inches	¾	1	1¼	1½	2	2½	3
Price	$1 75	2 00	2 90	4 10	6 00	12 00	17 00

ALL IRON, FOR GAS.

CLASS III.—(Fig. 270.)

ALL HAVE DOUBLE GATES.

Size.	Meas. from End to End of Hubs.	Price.
2 inch.	8¾ ins.	$7 00
2½ "		12 50
3 "	10⅜ "	16 00
3½ "		18 00
4 "	13⅜ "	20 00
5 "	13⅞ "	26 00
6 "	15¼ "	30 00
8 "	15⅝ "	43 00
10 "	16 "	58 00
12 "	17½ "	72 00

IRON, BRASS MOUNTED, ETC.

CLASS II.—(Figs. 269, 270.)

ALL HAVE DOUBLE GATES.

Size.	Diameter of Stand'd Flange.	Measurement from Face to Face of Flanges.	Meas. from Face to Face of Screw Socket.	Brass Mounted. Screw Socket.	Brass Mounted. Flange Ends.	All Iron, or Iron Faces. Screw Socket.	All Iron, or Iron Faces. Flange Ends.
inch.	inch.	inch.	inch.				
2	6	5⅞	5¾	$6 50	$7 00	$6 00	$6 50
2½	7	6½	6½	10 50	11 40	10 10	11 00
3	8	7¾	7⅛	14 00	14 90	13 10	14 00
3½	8½	7⅞	7¾	17 50	18 40	16 60	17 50
4	9	9⅜	10	20 10	21 00	18 80	19 75
5	10	10¾	10¾	26 25	26 25	24 50	24 50
6	11	12 5/16	12¼	31 50	31 50	29 75	29 75
8	13	12⅞	13	45 50	45 50	42 00	42 00
10	16	14⅝			57 00		52 50
12	18	15¾			70 00		65 60

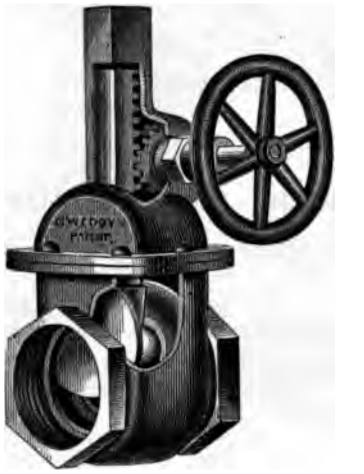


Fig. 271.

EXTRA HEAVY IRON, BRASS MOUNTED.

CLASS IV.—(Figs. 269, 270.)

ALL HAVE DOUBLE GATES.

Class IV. designates the regular heavy pattern **Water-Main Valve**, with Spigot or Hub Ends, also extra Flange Valves.

Size.	Diameter of Standard Flange.	Meas. from Face to Face of Flanges.	Measurement from End to End of Hubs.	Price.
2 inches.			8¾ inches.	$8 00
2½ "	7 inches.	6½ inches.		
3 "	8 "	7¾ "	10⅜ "	17 00
3½ "	8½ "	7⅞ "		
4 "	9 "	9⅜ "	13⅜ "	22 00
5 "	10 "	10¾ "	13⅞ "	30 00
6 "	11 "	12 5/16 "	15¼ "	36 00
8 "	13 "	12⅞ "	15⅝ "	50 00
10 "	16 "	14⅝ "	16 "	66 00
12 "	18 "	15¾ "	17½ "	90 00
14 "	20 "	15¾ "	17½ "	
16 "	22 "	16¼ "	17½ "	
18 "	24 "	16¼ "	19½ "	
20 "	26 "	17⅞ "	19½ "	
24 "	30 "	20 "	20¾ "	
30 "	36 "	22½ "	24 "	
36 "				

QUICK-OPENING VALVES, IMPROVED SLIDING STEM.

(Fig. 271.)

Fig. 272.

IRON, BRASS MOUNTED.

CLASS V.

ALL HAVE DOUBLE GATES.

Size.	Brass Mounted. Hubs.	Brass Mounted. Screw Socket.	Brass Mounted. Flange.	All Iron, or Iron Faces. Screw Socket.	All Iron, or Iron Faces. Flange.
2 inch.	$10 00	$8 30	$9 00	$7 25	$8 50
2½ "	15 00	13 75	14 65	13 35	14 30
3 "	20 00	17 30	18 20	16 40	17 30
3½ "	25 00	21 30	22 20	20 40	21 30
4 "	30 00	24 50	25 40	23 20	24 10
5 "	35 00	30 60	30 60	28 90	28 90
6 "	40 00	36 75	36 75	35 00	35 00
8 "	55 00		52 50		48 00

ALL BRASS.

CLASS VI.

ALL HAVE DOUBLE GATES.

Size.	Price.
1 inch.	$3 30
1¼ "	4 50
1½ "	5 40
2 "	7 80
2½ "	13 60
3 "	20 50

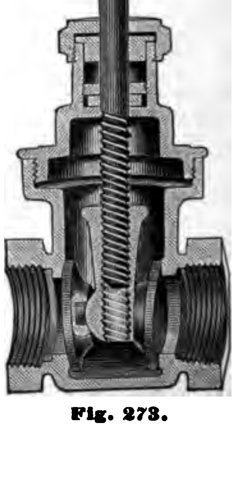


Fig. 273.

Fig. 274.

THE CHAPMAN VALVE.

IRON BODY WATER VALVES.

With Double Gate (Composition Mounted and Babbitt Metal Seats) to bear extra heavy pressure on either face.

WITH HUB, FLANGE, OR SPIGOT.

Diameter of Pipe....	2	3	4	6	8	10	12	14	16	18	20	24	30 in.
" Flanges,	6	8	9	11	13	16	18	21	23	25	27	31	37½
Price, each.........$	14 00	17 00	23 00	38 00	52 00	66 00	90 00						

IRON BODY GAS VALVES.

With Double Gate, Composition Stuffing Box and Babbitt Metal Seats to bear heavy pressure on either face.

WITH HUB, FLANGE OR SPIGOT.

Diameter of Pipe...	2	3	4	6	8	10	12	14	16	18	20	24	30 in.
" Flanges,	6	8	9	11	13	16	18	21	23	25	27	31	37½
Price, each........$	11 00	14 00	20 00	31 00	46 00	57 50	73 00						

Indicators and Floor Stands furnished to Order.

In ordering, please state whether to turn to right or left hand *to open*, and if nut or wheel on spindle is required.

COMPOSITION STEAM AND WATER VALVES.

WITH BABBITT METAL SEATS.

Size..........................	½	¾	1	1¼	1½	2	2½	3 inches.
Screw Ends...............$	1 20	1 75	2 50	3 50	5 00	7 50	15 00	22 00
Flanged "						12 00	22 00	26 00

IRON BODY STEAM AND WATER VALVES.

WITH COMPOSITION PLUG, SPINDLE, STUFFING BOX, AND GLAND AND BABBITT METAL SEAT.

Size............	2	2½	3	3½	4	5	6 inches.
Diameter Flanges......	6	7	8	8½	9	10	11
Price, each, Screw Ends.....$	7 50	11 00	14 50	18 50	21 00	27 50	33 00
" " Flanged "	8 35	11 75	15 50	19 50	22 00	27 50	33 00

Larger Sizes Furnished to Order.

Fig. 275.

LUDLOW'S PATENT SLIDING STOP VALVES.

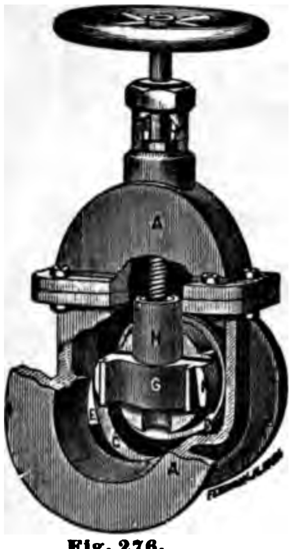


Fig. 276.

Fig. 277.

BRASS VALVES.—DOUBLE GATE.

PARALLEL SEATS. NEW STYLE, GLAND IN PACKING BOX.

		Extra Charge for Slide Stem and Lever.
½ inch, Brass	.. ..$1 30	50 cents.
¾ " "	.... 1 65	50 "
1 " "	.... 2 30	50 "
1¼ " "	.... 3 25	55 "
1½ " "	.... 4 65	60 "
2 " "	.... .. 6 75	65 "
2½ " "	.. ....13 50	70 "
3 " "	........19 50	75 "

☞ *Larger Sizes made to Order.*

In packing the Brass Valves, see that the small ring is at the bottom of the chamber, and the *gland above the packing*. Also, avoid daubing the faces with *lead*.

Fig. 278.

Fig. 279.

IRON VALVES.—SINGLE GATE.

BRASS MOUNTED, WITH GOOD STEAM METAL, NOT YELLOW BRASS.

Screwed Socket and Flanged, up to 6 inch. inclusive have brass nuts and glands to Packing Box. Valves, 2½ to 5 inch., will bear heavy pressure either side of gate.

Size.	Diameter of Stan'd Flange.	Measurement from Face to Face of Flanges.	Measurement from End to End of Hubs.	Measurement from Face to Face of Screw Socket.	Brass Mounted. Screw Socket.	Brass Mounted. Spigot, Flange, or Hub.	All Iron and Iron Faces. Screw Socket.	All Iron and Iron Faces. Spigot, Flange, or Hub.	Outside Screw Extra. Net.
2½	7	6⅛		5⅜	$10 50	$11 25	$10 00	$11 00	
3	8	8⅜	10¾	8¼	14 00	15 00	13 00	14 00	
3½	8½	8⅛		8	17 50	18 50	16 00	17 00	
4	9	9⅝	11¾	8¼	20 00	21 00	18 50	19 50	
5	10	10¼	12	10¾	26 50	26 50	24 50	24 50	
6	11	11⅛	12½	11	32 00	32 00	30 00	30 00	$4 00
				Hub, Flange, or Spigot. Brass Moun'd	Iron Faces.	All Iron.	Indicator.	Standard and Indicator.	
7	12	11¼	13⅞	$42 00	$40 00	$38 00	$5 00	$15 00	4 50
8	13	11	14¼	48 00	46 00	44 00	5 00	15 00	5 00
10	16	12⅜	14	60 00	57 50	55 00	5 25	16 00	5 50
12	18	12⅞	14¼	75 00	73 00	70 00	5 50	16 00	6 00
14	20	13¾	15¼				6 00	17 00	8 00
16	22	13⅞	15½				6 50	17 00	10 00
18	24	14	15¼				7 00	18 00	11 00
20	26	15½	17				7 50	18 00	15 00
24	31	17	17				8 50	19 00	20 00
30	37		19						

Size.	Full Brass Mounted.	All Iron.	Iron Body, Brass Gate and Stem.	Extra for Slide Stem and Lever.
1½ inches.	$5 50	$5 25	$4 75	$0 60
2 "	6 50	5 75	5 50	65
DOUBLE GATES.				
2 "	7 00	6 50	6 25	65
2½ "	11 00	10 00	10 00	65

Fig. 276 represents our SINGLE GATE IRON VALVE.

Fig. 279 shows one of our DOUBLE LARGE VALVES, intended to bear heavy pressure either side of Gate.

QUICK-MOVING SLIDE STEM AND LEVER VALVES.

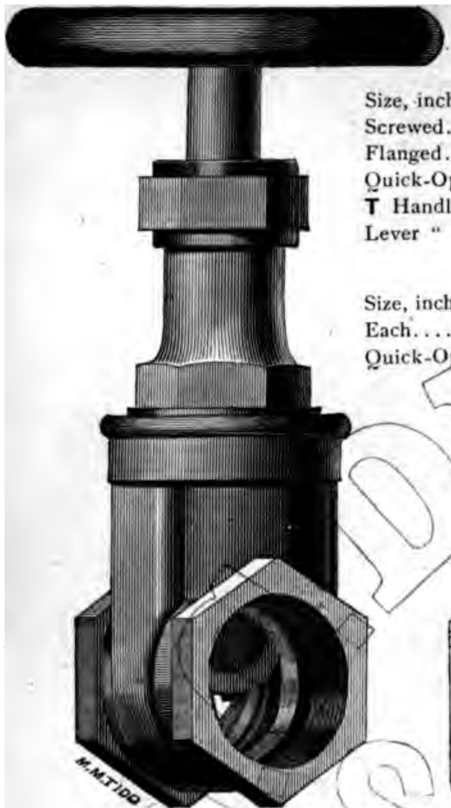
(Fig. 280.)

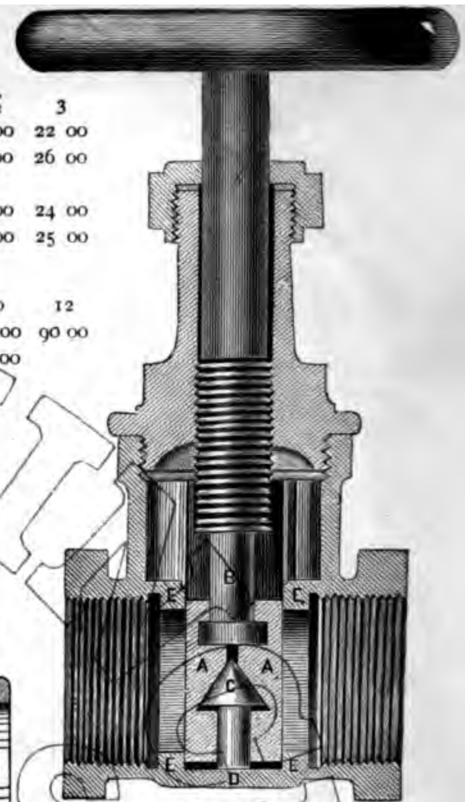
DOUBLE GATE IRON VALVES.

TO BEAR EXTRA HEAVY PRESSURE EITHER SIDE.

Size.	Diameter of Standard Flange.	Meas. from Face to Face of Flanges.	Meas. from End to End of Hubs.	Hub, Flange, or Spigot. Brass Mounted.	Iron Faces.	All Iron.	Indicator.	Standard and Indicator.	Outside Screw Extra. Net.
3	8	8⅛	10¾	$17 00					
3½	8½	8⅛		21 00					
4	9	9⅝	11¾	22 00					
5	10	10¾	12	30 00					
6	11	11⅛	13¼	36 00					
7	12	11¼	13⅞	45 00			$5 00	$15 00	
8	13	13¼	13⅞	50 00			5 00	15 00	
10	16	15	15¾	66 00			5 25	16 00	
12	18	15¾	15¾	90 00			5 50	16 00	
14	21	15¾	15¾						
16	23	16	15¾						
18	25	17	18						
20	27	17¾	19½						
24	31	21	22¾						
30	37½	22½	24						
36									
42									
48									

Fig. 280.





PEET VALVE.

BEST COMPOSITION.

Size, inches	¼	⅜	½	¾	1	1¼	1½	2	2½	3
Screwed	$1 00	1 00	1 20	1 75	2 50	3 50	5 00	7 50	15 00	22 00
Flanged								12 00	22 00	26 00
Quick-Open'g, T Handle					3 00	4 00	6 00	9 00	18 00	24 00
Lever "					4 00	5 00	7 00	10 00	19 00	25 00

IRON BODY, BRASS MOUNTED.

Size, inches	2½	3	3½	4	5	6	7	8	10	12
Each	$12 00	15 00	18 00	20 00	25 00	30 00	40 00	50 00	65 00	90 00
Quick-Open.	16 00	20 00	22 00	25 00	30 00	35 00	45 00	55 00	70 00	

Fig. 281.

Fig. 282.

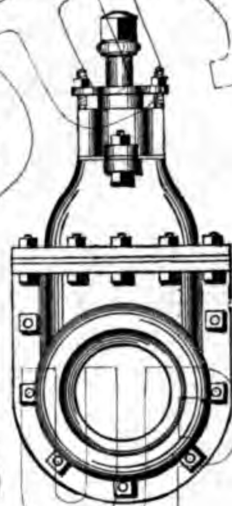


Fig. 283.

AYRES IMPROVED VALVES.

For Gas, per inch....... $5 00

For Water, per inch....... 5 50

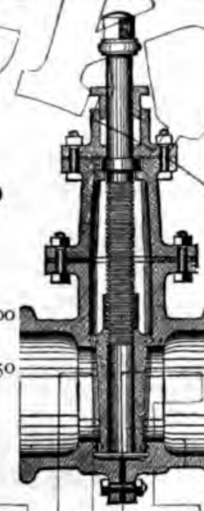


Fig. 284.

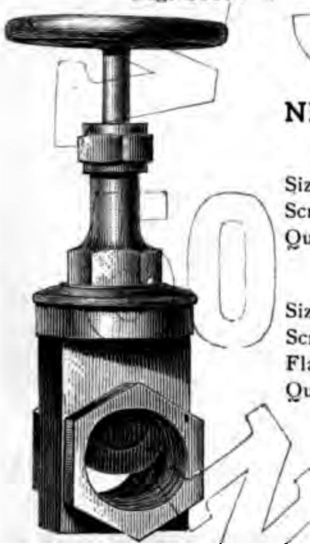


Fig. 285.—Direct Valve, Screwd.

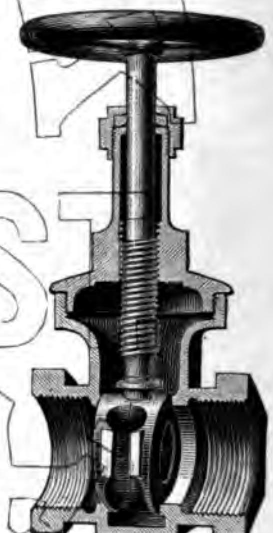


Fig. 286. – Direct Sectional View.

NEWPORT "DIRECT" DOUBLE GATE SLIDE VALVES.

BRASS.

Size, inches	½	¾	1	1¼	1½	2	2½	3
Screwed	$1 20	1 75	2 50	3 50	5 00	7 50	15 50	22 50
Quick-Opening, Screwed			4 00	5 00	6 50	9 50	18 00	25 00

BRASS MOUNTED.

Size, inches	2½	3	3½	4	5	6	8	10	12
Screwed	$9 00	13 50	16 50	21 00	27 00	35 50			
Flanged	9 75	14 25	17 50	22 00	27 00	35 50	50 00	66 50	90 00
Quick-Open'g, Screwed,	10 75	15 25	18 50	23 50	29 50	38 00			
" Flanged,	11 75	16 25	19 50	24 50	29 50	38 00			

WATER AND GAS GATES.

All Double-Faced. Made with "Nut for Wrench," unless otherwise ordered.

Size, Inches	2½	3	3½	4	5	6	8	10	12
Water Gate, Screwed	$9 00	13 50	16 50	21 00	27 00	35 50			
" Spigot, Flange, or Hub	9 75	14 25	17 50	22 00	27 00	35 50	50 00	66 50	90 00
Gas Gates, Screwed		9 50		19 00	25 50	30 00			
" Spigot, Flange, or Hub		11 00		20 00	25 50	30 00	45 00	58 00	74 00

Larger sizes, price given on application.

STANDARD FLANGES AND DISTANCES FROM FACE TO FACE OF NEWPORT DIRECT VALVE.

Size.	Diameter Standard Flanges.	Measurement from Face to Face of Flange.	Measurement from End to End of Hub.	Measurement from End to End of Screw.
2½ inch.	7 inch.	6⅜ inch.		6 inch.
3 "	8 "	6½ "	10 inch.	6½ "
3½ "	8½ "	7½ "		7½ "
4 "	9 "	8½ "	12 "	8½ "
5 "	10 "	9½ "	13 "	9½ "
6 "	11 "	10 "	13½ "	10 "
8 "	13 "	11¾ "	15 "	11¾ "
10 "	16 "	15¾ "	17½ "	
12 "	18 "	18¼ "	19 "	

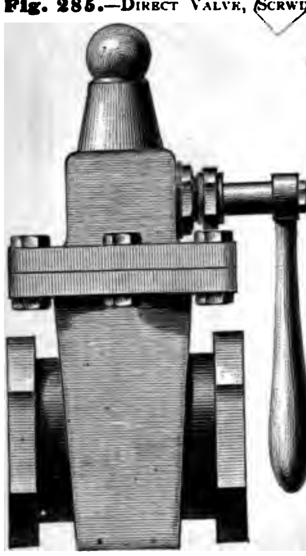


Fig. 287.—Iron Quick-Opening, Brass Mounted.

Fig. 288.– Flanged "Direct" Steam Valve.

AIR COCKS.

Fig. 289.

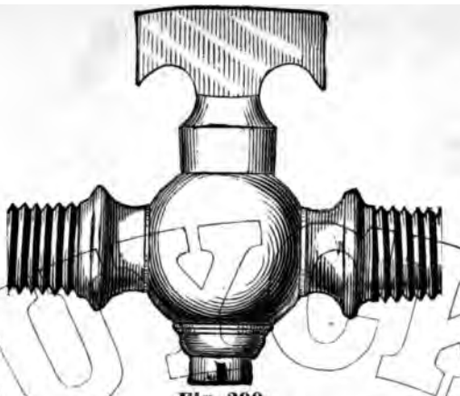


Fig. 290.

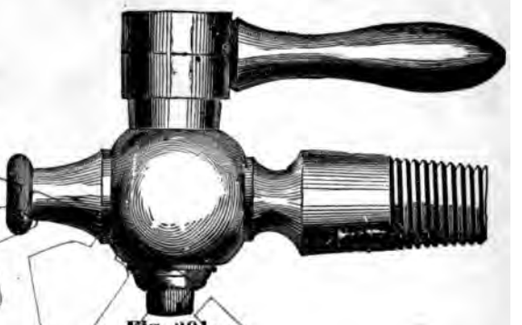


Fig. 291.

Fig. 292

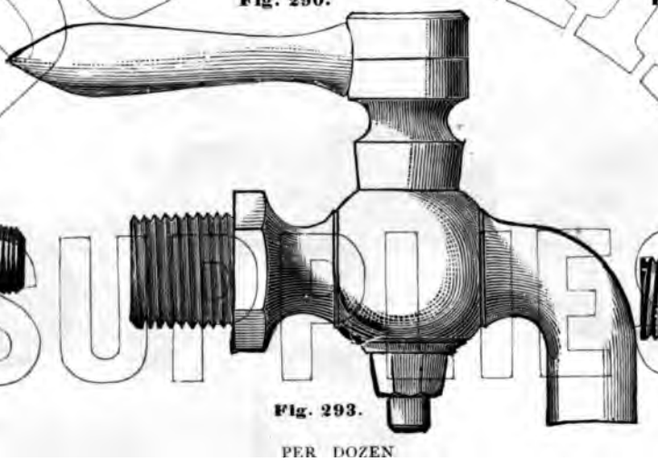


Fig. 293.

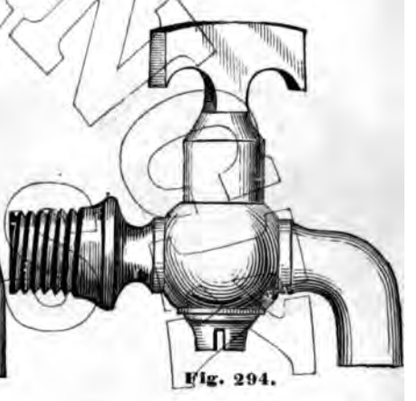


Fig. 294.

PER DOZEN

Size, inch	1/8	1/4	3/8
Fig. 289	$6 00	7 50	9 00
" 290	6 00	7 50	9 00
" 291		10 00	
" 292	9 00	10 50	

Size, inch	1/8	1/4	3/8
Fig. 292, With Lever Handle		$14 50	16 50
" 293 { With Lever on Side		12 00	15 00
" 294	$7 50	9 00	13 50

CYLINDER COCKS.

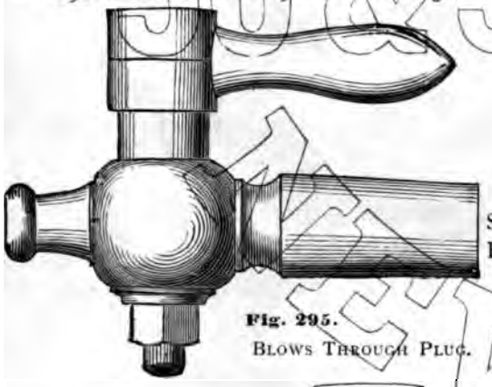


Fig. 295.

BLOWS THROUGH PLUG.

PER DOZEN.

Size	1/4	3/8	1/2	3/4	1 in
Fig. 295,	$10 00				
" 296,	8 00	10 00	12 00	15 00	
" 297,			12 00	15 00	18 00
" 298,	13 20	15 00	16 80	22 25	26 25

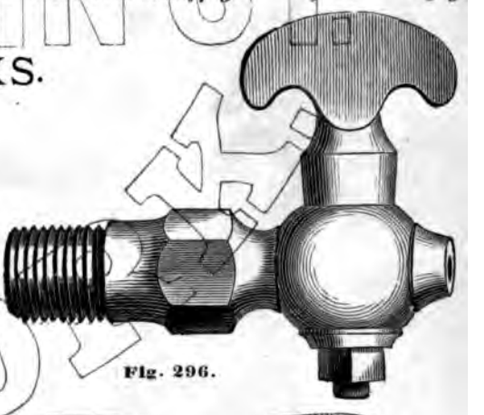


Fig. 296.

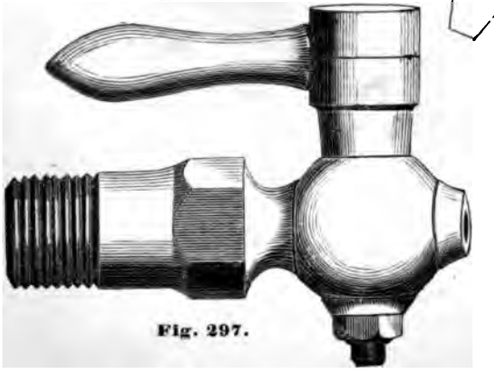


Fig. 297.

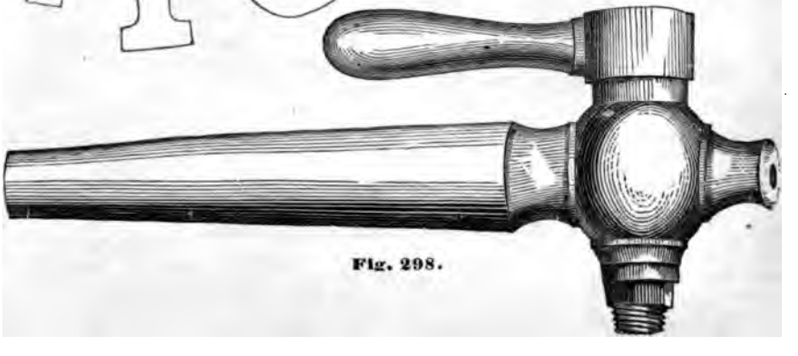


Fig. 298.

S.DUNKING SUPPLIES 50&52 JOHN ST NEW-YORK

GAS COCKS.

Fig. 299.—Gas Cock, Flat or Square Heads.

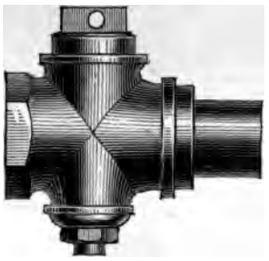


Fig. 300.—Union Meter Cock, Flat Head.

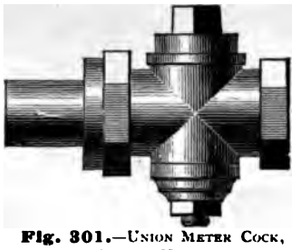


Fig. 301.—Union Meter Cock, Square Head.

Fig. 302.—Union Meter Cock, Handled.

Size, inch	¼	⅜	½	¾	1	1¼	1½	2	2½	3
Gas Service, each,	$0 60	60	80	1 00	1 50	2 80	3 80	6 00	10 00	16 0
Plain Meter, "			80	1 10	1 50	3 00	4 00	6 00		
Union "		80	1 00	1 30	1 75	3 50	4 75	7 00	12 00	20 0

IRON COCKS.

Size, inch	½	¾	1	1¼	1½	2	2½	3	3½	4
Screwed Ends	$0 75	95	1 25	1 65	2 40	3 50	5 00	7 00	11 00	15 0
Flanged "						4 50	6 00	9 00	13 00	17 0
Brass Plug	1 30	1 70	2 20	3 00	4 00	7 00	12 00	18 00	30 00	40 0
Three-Way			1 90	2 50	3 25	5 00	8 00	14 00	21 00	32 0
" " Brass Plug			2 70	3 50	4 60	8 00	13 50	23 00	36 00	53 0

Fig. 304.

Fig. 303.

WOODEN HANDLE GAUGE COCKS.

Size, inch	⅜	½	¾
Common, per doz.,	$10 00	18 00	24 00
Loose Valve, "	18 00	21 00	27 00

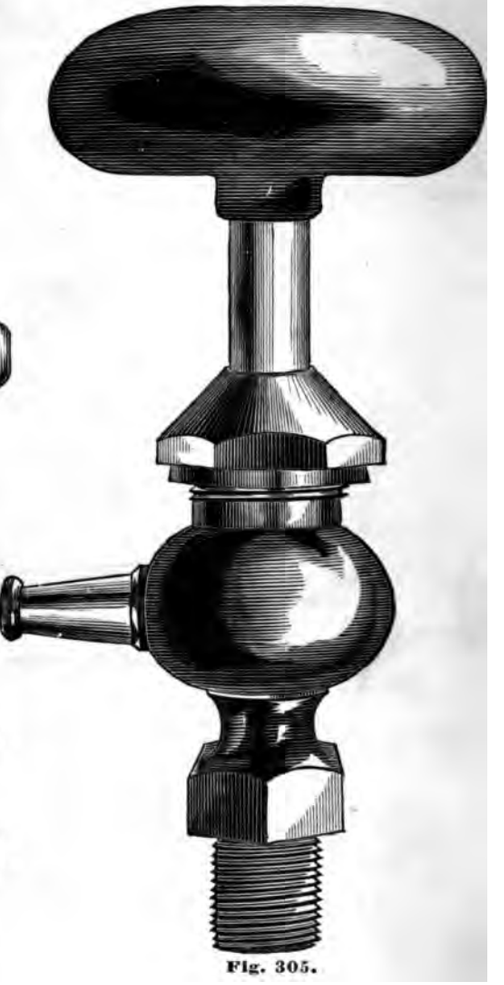


Fig. 305.

ASHCROFT'S IMPROVED SELF-CLEANING WOODEN HANDLE GAUGE COCK.

Size, inch	⅜	½	¾
Babbitt Seat, with Cleaner	$2 75	3 00	3 25
" " without "	2 37	2 50	3 00
Conical "		3 25	3 50
Common "		2 00	2 25

GAUGE COCK WITH STUFFING BOX.

WOODEN HANDLE.

Size, inch	⅜	½	¾
Each	$1 15	1 35	1 7

GAUGE COCKS.

ROSS' PATENT, WITH LEVER.

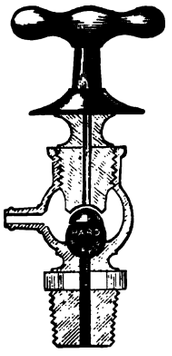


Fig. 306.

Small	Ball, Rough..	$24 00
"	" Finished,	27 00
Large	" Rough..	27 00
"	" Finished,	30 00

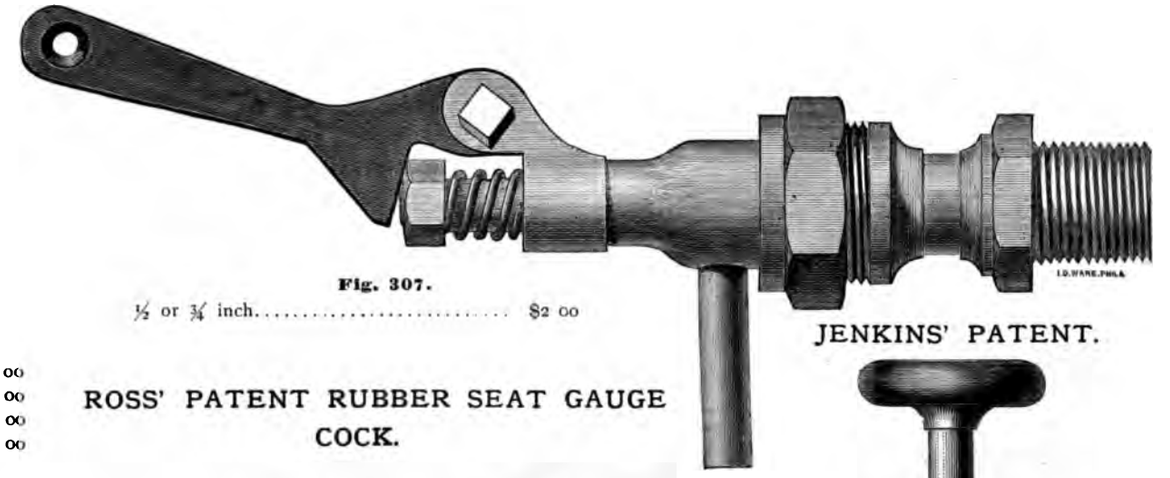


Fig. 307.

½ or ¾ inch..... $2 00

ROSS' PATENT RUBBER SEAT GAUGE COCK.

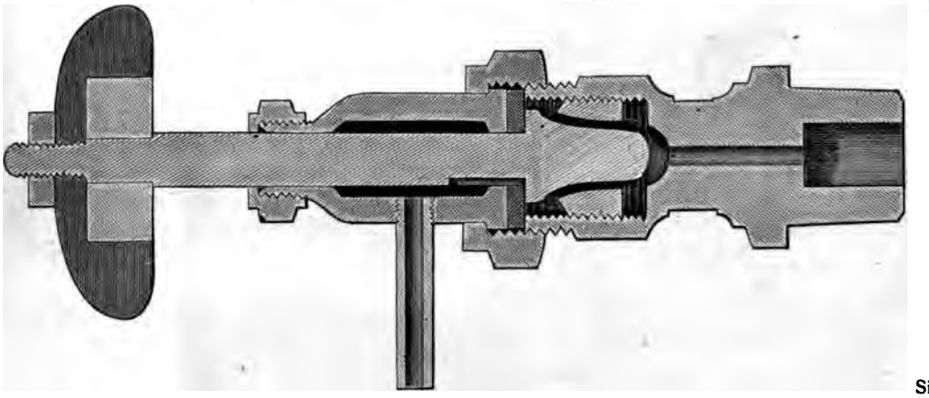


Fig. 308.

Size, inch.....	⅜	½ or ¾
Price.....	$2 50	3 00

JENKINS' PATENT.

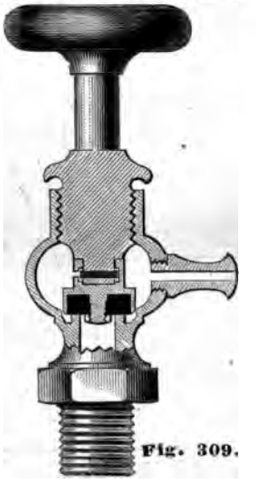


Fig. 309.

Size inch.....	⅜	½	¾	1
Wood or Iron Wheel Handles,	$2 00	2 50	2 80	4 00
Lever Handles.....		2 75	3 00	4 50
Iron Wheel Handles and Stuffing Box.....		3 00	3 50	5 00
Wood Wheel Handles and Stuffing Box.....		3 00	3 50	5 00

REGESTER'S PATENT GAUGE COCK.

With Iron Balls, cut ⅜, ½, ¾, or Blank.... $1 50
" Brass " " ⅜, ½, ¾, " 2 00

Fig. 310.

IMPROVED BALL LEVER.

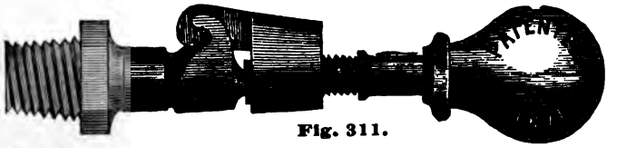


Fig. 311.

½ inch..... $1 50 | ¾ inch... ..... $1 65

SMITH'S PATENT.

½ or ¾ inch, each..... $1 25

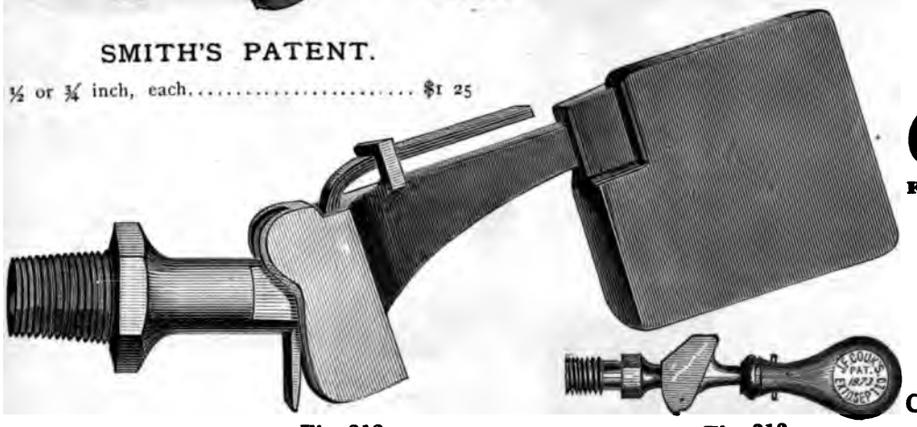


Fig. 312.

Fig. 313.

Each.... ..... $1 00

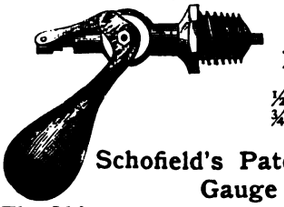


Fig. 314.

IMPROVED MISSISSIPPI.

½ inch..... $1 50
¾ " 1 60

Schofield's Patent Self-Closing Gauge Cock.

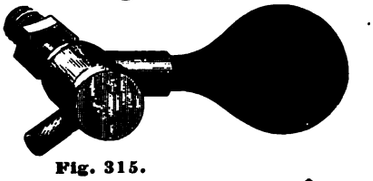


Fig. 315.

Per Set..... $3 00

COOK'S PATENT.

GAUGE COCKS.

BEST STEAM METAL.

Fig. 316.

Fig. 317.

Fig. 318.

MISSISSIPPI GAUGE COCKS.

Size, inches.....	⅜	½	⅝	¾	⅞	1
Plain or Cut, each...	$0 75	75	95	1 15	1 50	1
With Spring "	80	80	1 00	1 20	1 55	1

Fig. 319.

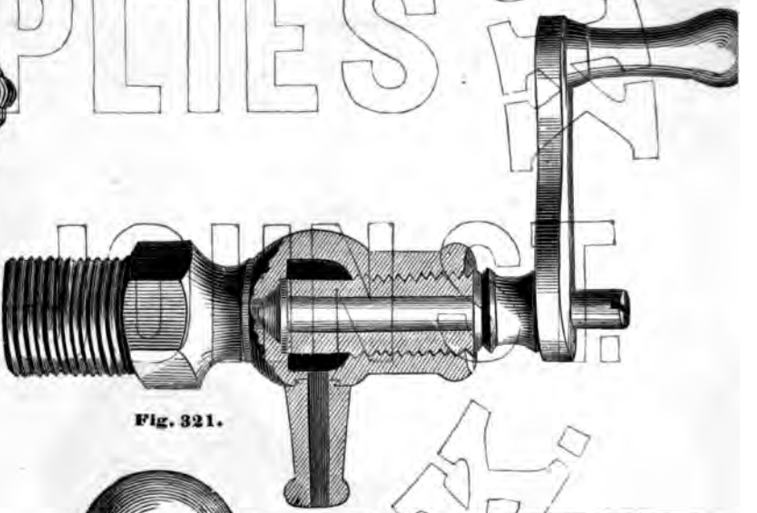


Fig. 321.

Fig. 320.

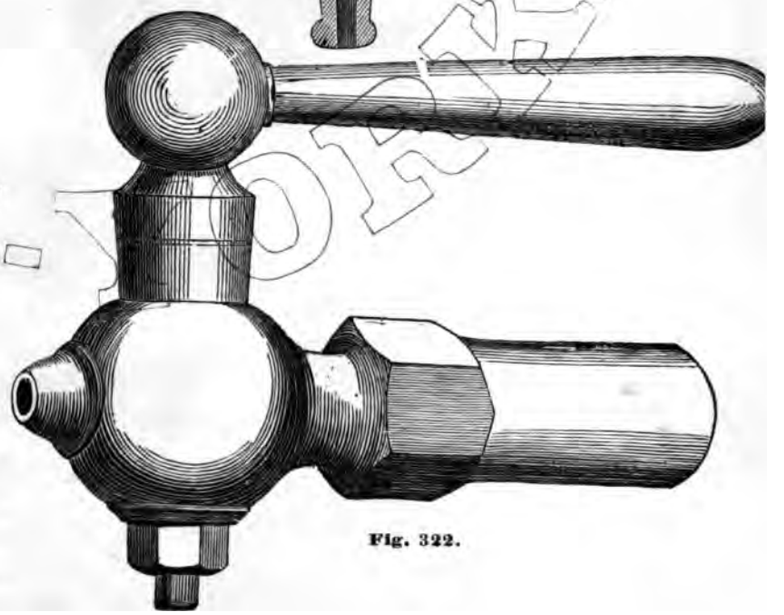


Fig. 322.

Size, inches.....	⅜	½	¾
Fig. 319.....			$30 00
" with Lock-nut.....			42 00
" " " Heavy.....			48 00
" " " Long Shank..			51 00
Fig. 320.....	11 00	15 00	18 00
" 321.....	15 00	18 00	24 00
" 322..		18 00	

QUICK SUPPLIES FROM 50 TO 52 LIBERTY ST. NEW-YORK.

WROUGHT IRON PIPE,

FOR GAS, STEAM, WATER, OR OIL.

Inside Diameter.	Price per Foot, Plain.	Price per Foot, Galvanized, Rubber-Coated, or Enameled.	Weight per Foot.
⅛ inch.	$0 06	$0 11	.24 lbs.
¼ "	06	11	.42 "
⅜ "	07	12	.56 "
½ "	07	12	.85 "
¾ "	09	16	1.13 "
1 "	12½	22	1.67 "
1¼ "	18	30	2.26 "
1½ "	22	34	2.69 "
2 "	31	45	3.67 "
2½ "	46	70	5.77 "
3 "	60	90	7.55 "
3½ "	80	1 20	9.06 "
4 "	1 00	1 50	10.73 "
4½ "	1 25	1 80	12.49 "
5 "	1 50	2 20	14.56 "
6 "	2 00	3 25	18.77 "
7 "	2 85		23.41 "
8 "	3 50		28.35 "

9 to 14 inch Diameter at special rates.

CAST IRON DRAIN, WATER, AND SMOKE PIPES.

Fig. 323.

Size.	Single Hub, per foot.	Double Hub per 5 foot length.
2 inch.	$0 35	$2 25
3 "	40	2 50
4 "	50	3 00
5 "	65	4 00
6 "	75	5 00
7 "	1 25	
8 "	1 50	
10 "	2 50	
12 "	3 50	
15 "	5 00	

Pipes less than 12 inch diameter are made 5 feet long (not including Hub); 12 inch diameter and over, 12 feet long.

Heavy Cast Iron Pipe, to sustain pressure, price per pound urnished on application.

LAP-WELDED AMERICAN CHARCOAL IRON BOILER TUBES.

Outside Diameter.	Thickness Wire Gauge.	Weight per Foot.	Price per Foot.
1 inch.	.15	.72 lbs.	$0 23
1¼ "	.15	.90 "	23
1½ "	.14	1.25 "	23
1¾ "	.13	1.66 "	23
2 "	.13	1.98 "	23
2¼ "	.13	2.24 "	25
2½ "	.12	2.75 "	29
2¾ "	.12	3.04 "	33
3 "	.12	3.33 "	35
3¼ "	.11	3.96 "	40
3½ "	.11	4.27 "	46
3¾ "	.11	4.59 "	53
4 "	.10	5.32 "	58
4½ "	.10	6.01 "	67
5 "	.9	7.23 "	85
6 "	.8	9.35 "	1 20
7 "	.8	12.43 "	1 60
8 "	.8	15.11 "	2 25
9 "	.7	18.00 "	
10 "	.6	22.19 "	

Intermediate sizes not on list, same price as next size above.

WROUGHT IRON SPIRAL RIVETED PIPES.

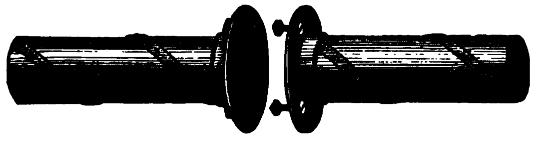


Fig. 324.

FLANGED CONNECTIONS, FOR PRESSURE USES.

Suitable for general use, where pressure and strength are necessary.

Inside Diameter.	Per Lineal Foot.			
	Black.	Galvanized.	Dipped in Coal Tar.	Thickness, W. G.
3 inch.	$0 22	$0 28	$0 [illegible]	No. 26
3½ "	23	30	24	" 25
4 "	25	33	29	" 24
4½ "	28	35	29	" 24
5 "	30	45	36	" 23
6 "	35	50	41	" 22
7 "	45	70	50	" 21
8 "	50	75	58	" 21
9 "	75	1 10	63	" 20
10 "	1 15	1 65	1 23	" 18
11 "	1 25		1 35	" 18
12 "	1 45		1 55	" 17
13 "	1 60		1 72	" 17
14 "	2 05		2 18	" 16
16 "	3 10		3 26	" 14
18 "	4 50		4 70	" 12
20 "	5 00		5 30	" 10

LIGHT WROUGHT IRON SPIRAL LOCKED PIPES.

Fig. 325.

Showing Form of Connection.

WROUGHT IRON GALVANIZED LEADER.

Especially adapted for use as house leaders, stove pipe, etc.

Inside Diameter.	Per Lineal Foot.			
	Black.	Galvanized.	Dipped in Tar.	Numbered W. G.
3 inch.	$0 18	$0 24	$0 19	No. 28
3½ "	20	28	20	" 27
4 "	24	30	21	" 26
5 "	30	35	23	" 25
6 "	35	40	25	" 25
7 "	40	45	28	" 24
8 "	45	50	30	" 24

HYDRAULIC TUBES.

¼ inch thick or under .... per pound, $0 16
Over ¼ inch to ⅜ inch thick, inclusive .... " 18
" ⅜ " ½ " " .... " 20
" ½ " ¾ " " .... " 25
" ¾ " 1 " " .... " 30

BRASS AND COPPER TUBING.

Plain, to No. 20, inclusive, above ¼ to 3 inch, inclusive, per lb., $0 44
Nos. 21, 22, 23, 2 cents advance on List for each No.
" 24, 25, 26, 4 " " " " "
Above No. 26, special rates.
Plain Tube, ¼ inch, No. 26, per lb. 70
" " 3-16 " " 26, " 1 10
" " ⅛ " " 26, " 1 60

All Mandrel Drawn Tubes, 5 cents advance on List Prices.

ZINC TUBING.

Per Pound.

Plain, $0 28 Fancy, $0 31 Scotch and Ex. Pat'ns, $0 34

GERMAN SILVER TUBING.

Per Cent.	4	6	9	12	15	16	18	20
" Lb...	85	95	1 10	1 25	1 40	1 45	1 55	1 65

SEAMLESS DRAWN COPPER AND BRASS TUBING.

LIST OF SIZES, WEIGHTS, ETC., REGULAR TUBES.

Outside Diameter.	Length.	Thickness Stub's Wire Gauge.	Wght. per Running Ft., Brass Tubes.	Wght. per Running Ft., Cop. Tubes.
Inch.	Feet.	Inch.	Lbs.	Lbs.
⅝	10	18	⅜	⅜
¾	11	17	½	½
13-16	10	17	9-16	9-16
⅞	10	17	⅝	⅝
15-16	10	16	11-16	11-16
1	10	16	¾	¾
1⅛	10	16	⅞	⅞
1¼	15	12 and 14	1¼	1¼
1⅜	10	12 " 14	1⅜	1⅜
1½	14½	12 " 14	1½	1 6-10
1⅝	12	12 " 14	1⅝	1 7-10
1¾	13	12 " 14	1¾	1 8-10
1 13-16	13	12 " 14	1 13-16	1 9-10
1⅞	12	12 " 14	1⅞	1 15-16
1 15-16	12	12 " 14	2	2 1-10
2	15	12 " 14	2 1-5	2¼
2⅛	13	12 " 14	2¼	2⅜
2¼	14	12 " 14	2⅜	2½
2⅜	13	12 " 14	2½	2⅔
2½	14	11 " 13	2¾	3
2⅝	12	11 " 13	3	3⅛
2¾	12	11 " 13	3⅛	3¼
2⅞	10	11 " 13	3¼	3⅜
3	12¾	11 " 13	3⅓	3½
3⅛	10	11 " 13	3½	3¾
3¼	11	11 " 13	3⅞	4⅛
3⅜	10	11 " 13	4⅛	4¼
3½	10	11 " 13	4¼	4⅜
4	10	11 " 13	5	5¼
4½	10	11 " 13	6	6½
5	10	10 " 12	7	8
6	10	10 " 12	9	10

Specify *Outside Diameter*, and, if to be *Annealed*, whether *Ends* or *Whole Length*. Special Lengths and Gauges made to order.

Made to Correspond with IRON TUBES, and to fit IRON TUBE FITTINGS.

Outside Diameter.	Same as Iron Pipe Sizes.	Length.	Weight per Running Foot.
⅜ in.	⅛ in.	17 feet.	¼ lb.
9-16 "	¼ "	17 "	7-16 "
11-16 "	⅜ "	17 "	⅝ "
13-16 "	½ "	11 "	8-10 "
1 1-16 "	¾ "	11 "	1¼ "
1 5-16 "	1 "	11 "	1 7-10 "
1 9-16 "	1¼ "	11 "	2½ "
1 13-16 "	1½ "	11 "	2¾ "
2 5-16 "	2 "	11 "	3½ "
2 13-16 "	2½ "	10 "	4¾ "
3½ "	3 "	10 "	

For less than five hundred pounds of one size, three cents per pound extra.

Three cents per pound added for cutting in short lengths.

SEAMLESS DRAWN COPPER TUBES,

FOR COPPERSMITHS.

From 18 Stub's Gauge upward, and any required length.

Sizes and Weights of No. 18 Wire Gauge:

Inside Diameter.	Weight per Foot.	Inside Diameter.	Weight per Foot.
½ in.	.32 lb.	1⅝ in.	1.15 lb.
⅝ "	.43 "	1¾ "	1.20 "
¾ "	.55 "	1⅞ "	1.30 "
⅞ "	.65 "	2 "	1.40 "
1 "	.75 "	2⅛ "	1.50 "
1⅛ "	.85 "	2¼ "	1.60 "
1¼ "	.95 "	2⅜ "	1.70 "
1⅜ "	1.02 "	2½ "	1.80 "
1½ "	1.10 "		

Brass, 5 cents per pound less than copper.

SEAMLESS DRAWN BRASS TUBES,

FOR PLUMBERS.

Outside Diameter,	⅝	¾	⅞	1	1¼	1½
Plain, per Foot...	$0 25	30	45	60	70	80
Tinned, " ...	30	35	50	70	80	90

FITTINGS FOR WROUGHT IRON PIPE.

ELBOWS.

Fig. 326.—PLAIN.

Fig. 327.—REDUCING.

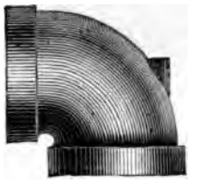


Fig. 328.—BACK OUTLET.

CROSSES.

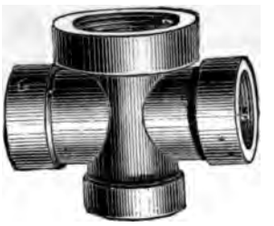


Fig. 329.

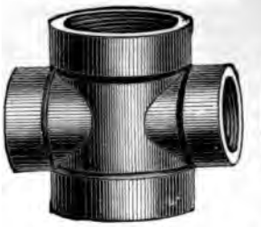


Fig. 330.

Fig. 331.—PLAIN.

45° ELBOWS.

Fig. 332.—CAST.

Fig. 333.—MALL.

TEES.

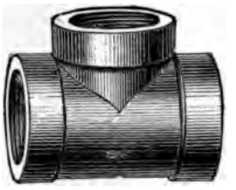


Fig. 334.—PLAIN.

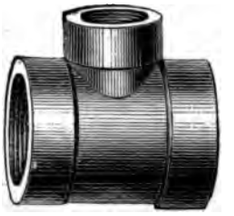


Fig. 335.—REDUCING.

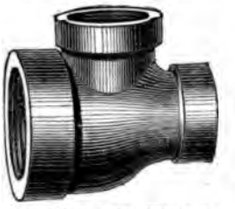


Fig. 336.—REDUCING.

Fig. 337.—BULL-HEAD.

RETURN BENDS.

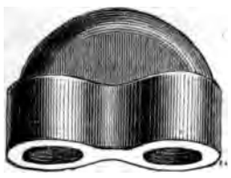


Fig. 338.—CLOSE.

Fig. 339.—OPEN.

Fig. 340.—BACK OUTLET.

Fig. 341.—SIDE OUTLET.

CAPS.

Fig. 342.—CAST.

Fig. 343.—MALLEABLE.

Y OR LATERAL BRANCH.

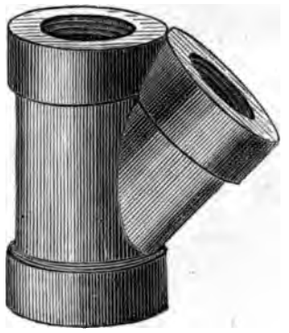


Fig. 345.

LONG SCREW.

Fig. 347.

UNIONS.

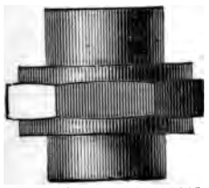


Fig. 344.—COMMON.

CORNER FITTING.

Fig. 346.

PLUG.

Fig. 348.

COUPLINGS.

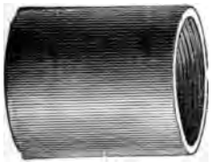


Fig. 349.—WROUGHT.

Fig. 350. CAST IRON REDUCING.

Fig. 351. MALLEABLE IRON REDUCING.

Fig. 352.

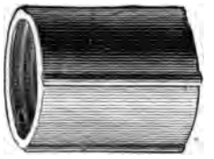


Fig. 353.—RIGHT AND LEFT.

BUSHINGS.

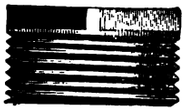


Fig. 354. WITH SQUARES.

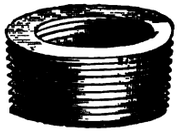


Fig. 355.—PLAIN.

NIPPLES.

Fig. 356.—CLOSE.

Fig. 357.—LONG.

Fig. 358.—SHOULDER.

LOCKNUTS.

Fig. 359. CAST.

Fig. 360. MALL.

WROUGHT IRON BENDS.

OFFSET.

Fig. 361.

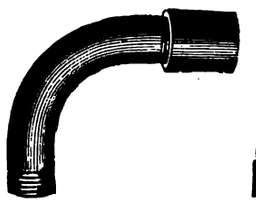


Fig. 362.—¼ TURN.

Fig. 363.—⅛ TURN.

WROUGHT IRON PIPE FITTINGS.

Size, inch	⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6	7	8
Elbows	$0 05	6	8	9	12	18	26	36	48	86	1 40	2 00	2 60	3 80	4 50	6 00	9 50	12 00
" 45°				10	14	20	30	40	52	90	1 45	2 10	2 75	4 00	4 75	6 50		
Tees	6	8	10	13	16	24	35	48	70	1 20	1 85	2 60	3 25	4 50	5 60	7 60	12 00	16 00
Y Branches						35	55	75	1 10	2 10	3 00	4 75	5 70					
Cross				18	24	35	45	70	90	1 60	2 50	3 75	5 00	6 00	7 00	10 00	15 00	20 00
Return Bends, Close				15	20	30	45	56	90	1 60	2 25	3 50	4 50					
" " Open				16	24	35	50	70	1 10	1 75	2 50	3 75						
Plugs		4	5	6	7	8	11	15	24	40	55	75	1 00	1 25	1 50	1 90	3 00	4 50
Reducing Couplings			8	10	12	16	20	30	45	75	1 25	1 75	2 25					
Couplings	5	6	7	8	13	14	19	22	38	70	1 00	1 40	1 50	2 00	2 50	3 60		
Bushings			7	8	10	12	15	20	30	45	70	1 00	1 30	1 85	2 10	3 00	4 00	5 00
Lock Nuts		4	5	6	7	8	12	16	22	35	50	65	90	1 10	1 40	2 00		
Nipples, Shoulder or Close	4	4	5	6	8	10	14	18	30	50	75	1 00	1 50	2 00	2 60	3 70	5 60	8 00
" Long (6 to 12 inch)	7	8	9	10	13	15	20	30	40	70	1 00	1 40	1 90	2 50	3 20	5 00		
Long Screw	23	28	31	43	60	70	1 00	1 20	1 60	2 70	3 50	4 90	6 00	7 00				
Wrought Iron Bends				28	37	56	77	1 12	1 65									
Caps		5	6	7	8	10	15	20	30	50	80	1 25	1 80	3 00	3 75	4 50		
Unions		16	22	28	36	46	64	80	1 20	2 10								

GALVANIZED IRON FITTINGS.

Size, inch	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	5	6
Elbows	$0 10	14	18	26	36	52	80	1 80	2 50	4 00	5 00	8 00	11 75
Tees	14	18	24	35	55	75	1 20	2 20	3 40	5 60	6 40	9 25	14 50
Nipples	10	12	16	22	30	40	60	90	1 30	2 00	2 60		
Couplings	8	10	15	20	25	32	50	1 00	1 60	2 40	3 00	3 25	5 00
Caps and Plugs	8	9	10	15	22	30	45	80	1 25	1 75	2 50		

For prices of Reducing Elbows, Tees, etc., take size of largest opening.

Prices of other Fittings, illustrated but not specified, furnished to order only.

Fig. 364.

FLANGE UNIONS.

DAME'S IMPROVED FLANGE UNION.

Every Flange is packed with a rubber gasket, saving time and expense in packing.

The gasket or packing, being held in the recess, can not be blown out by pressure.

The packing is entirely protected from the weather.

Size, inch	1	1¼	1½	2	2½	3	3½	4
Each	$1 65	1 80	1 90	2 10	2 50	3 00	3 75	4 50

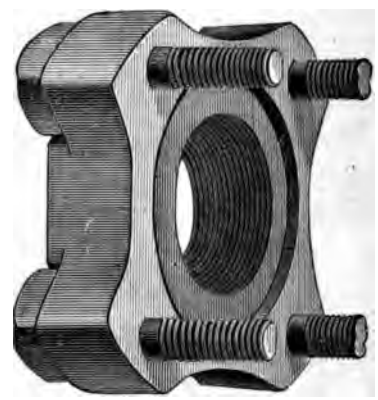


Fig. 365.

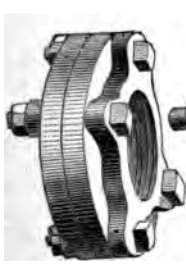


Fig. 366.—Common.

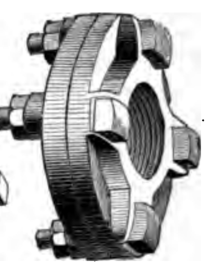


Fig. 367.—New Style.

FLANGE UNIONS WITH BOLTS AND NUTS.

Size, in.	1	1¼	1½	2	2½	3	3½	4	4½	5	6	7	8
Each,	$1 15	1 25	1 45	1 70	2 00	2 40	3 00	3 70	4 75	5 60	7 00	11 00	15 00

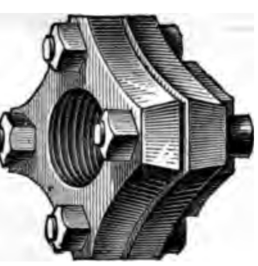


Fig. 368.—Square.

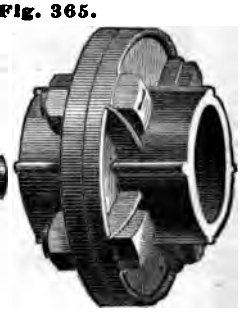


Fig. 369.—Malleable Iron

FLANGES.

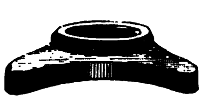


Fig. 370.—Curved.

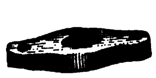


Fig. 371.—Oval.

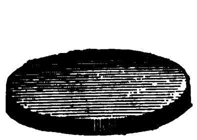


Fig. 372.—Blank.

Size of Pipe.	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	4½
3 inch	$0 15	18										
3½ "	18	20	23									
4 "	20	22	24	26	30							
4½ "	26	28	30	32	36							
5 "	32	35	36	38	44	48						
5½ "	38	40	43	46	50	55	60					
6 "	45	48	52	55	58	62	66	75				
6½ "		60	65	68	72	75	80	85				
7 "			76	80	83	86	88	94	1 00			
7½ "			88	90	92	95	98	1 05	1 12			
8 "				1 05	1 07	1 10	1 13	1 20	1 22	1 32	1 42	
8½ "					1 25	1 27	1 30	1 35	1 40	1 48	1 57	
Size of Pipe.	5	6	7	8								
9 "					1 40	1 43	1 48	1 52	1 58	1 65	1 75	
9½ "						1 60	1 63	1 70	1 75	1 82	1 90	
10 "	2 40	2 60					1 80	1 90	1 95	2 00	2 10	2 30
11 "	3 00	3 20					2 10	2 20	2 30	2 40	2 55	2 75
12 "	3 50	3 75	4 25				2 50	2 65	2 75	2 80	3 00	3 30
13 "	4 00	4 20	4 90	5 75							3 75	3 90
14 "	4 60	4 75	5 50	6 50							4 30	4 55

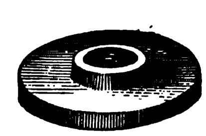


Fig. 373.—Common.

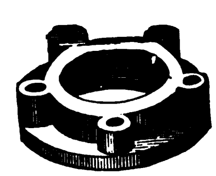


Fig. 374.—Bossed.

Curved Flanges 25 per cent advance on the above prices for the same size.

BLANK FLANGES.

Per Pound.. $0 10

ROUGH BRASS FITTINGS.

IRON PIPE SIZES.

Size, inches	1/8	1/4	3/8	1/2	3/4	1	1¼	1½	2	2½	3
Elbows	$0 12	13	16	24	35	50	80	1 20	1 75	2 75	4 50
Tees	15	16	20	30	48	75	1 10	1 60	2 60	4 00	6 75
Crosses	20	22	25	40	70	1 00	1 50	2 00	3 25	6 00	8 50
Return Bends, open pattern				50	70	1 00	1 50	2 00	3 25	6 00	8 50
Nipples, short			30	35	40	50	65	75	1 00	2 25	3 60
Nipples, long, not over 6 inches			40	50	60	70	1 00	1 30	1 70	3 25	5 25
Plugs or Caps	10	12	15	20	26	35	55	75	1 25	1 70	2 80
Couplings or Reducers	15	20	25	35	45	60	80	1 00	1 50	2 00	3 25
Lock Nuts		5	6	8	12	15	25	40	60	80	1 00

FINISHED BRASS UNIONS.

Size, inches	1/8	1/4	3/8	1/2	3/4	1	1¼	1½	2	2½	3
Price, each	$0 40	50	65	85	1 15	1 50	1 90	2 30	3 00	4 25	6 50

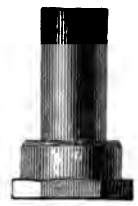


Fig. 375. SOLDERING UNION.

Fig. 376. SOLDERING NIPPLE.

Fig. 377. SOLDERING NIPPLE, FEM

SOLDERING UNIONS.

Size, inch.	1/4	3/8	1/2	3/4	1	1¼	1½	2	2½	3
Per dozen	$2 50	3 50	4 50	6 00	8 00	11 00	16 00	24 00	33 00	42 [illegible]

SOLDERING NIPPLES.

Size, inch.	1/4	3/8	1/2	3/4	1	1¼	1½	2	2½	3
Per dozen	$1 50	2 00	2 50	4 00	5 00	6 50	8 00	15 00	24 00	36 [illegible]

EXPANSION JOINTS.

Fig. 378.

Fig. 379.—BRASS SLEEVE.

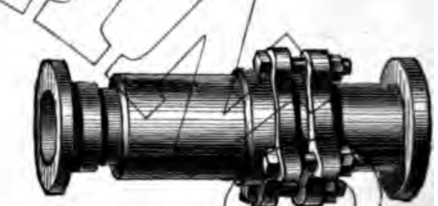


Fig. 380.—FLANGED.

Size, inches	3/4	1	1¼	1½	2	2½	3	3½	4	5	6	8
Fig. 378, Brass, Finished	$2 75	3 50	4 50	6 50	9 00	16 00	24 00					
" " Rough	2 00	2 75	3 50	5 50	8 00	14 50	22 00					
Fig. 379, Iron					7 00	12 00	18 00	26 00	30 00			
Fig. 380, " Flanged							20 00	28 00	32 00	46 00	60 00	96 00

PLAIN COUPLING.

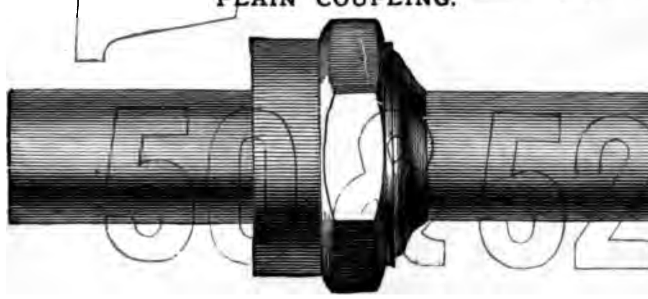


Fig. 381.

Size, inches	1/4	3/8	1/2	5/8	3/4	1	1¼	1½	1¾	2	2½	3
Finished.......per doz.	$4	5½	6	7	9	11	15	21	27	30	36	42
" Ground Face, "			7	9	11	13	18	25	30	36	42	50

Fig. 382.

WROUGHT IRON FERRULES.

Size, inches	1¼	1½	1¾	2	2¼	2½	2¾
Price	$0 20	20	20	20	25	30	35

Size, inches	3	3¼	3½	4	4½	5	6
Price	$0 40	45	50	60	80	80	1 10

GAS PIPE HOOKS.

Fig. 383.

Size, inches	1/4	3/8	1/2	3/4	1	1¼	1½	2
Per thousand	$7 50	7 50	8 00	10 50	13 50	18 00	22 50	27 50

Plumbers' Hooks for Lead Pipe.......................per lb., $0 20
Leader Hooks....................................... " 20

PATENT PIPE LEAK STOPPERS.

Fig. 384.

Size of Pipe, inches	1/2	3/4	1	1¼	1½	2	2½
Price, each	$0 70	75	80	90	1 00	1 20	1 50

PIPE STRAPS.

Fig. 385.

MALLEABLE IRON TINNED.

Fig. 385. All sizes from 1/4 to 1 inch, per lb.........$0 20

SHEET IRON TINNED.

Fig. 386. All Sizes from 1/4 to 2 inches, per lb.......$0 25

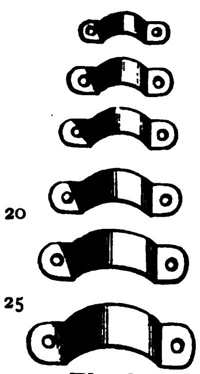


Fig. 386.

GAS COCK WRENCHES.

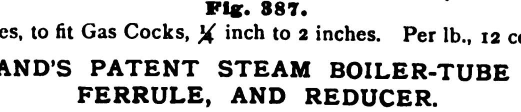


Fig. 387.

8 sizes, to fit Gas Cocks, 1/4 inch to 2 inches. Per lb., 12 cents.

COPELAND'S PATENT STEAM BOILER-TUBE PLUG, FERRULE, AND REDUCER.

75 cents per inch.

CHANDELIER HOOKS.

Fig. 388.

3/8 and 1/2 inch., per lb.....................$0 14

Fig. 389.

MALLEABLE IRON FITTINGS.

NOTE.—All sizes 2 inches and under furnished plain for Gas, and beaded for Steam, except those marked *, which are plain only. All sizes above 2 inches have bead or band. In ordering be particular to mention whether for Gas or Steam.

ELBOWS.

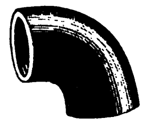


Fig. 390.
Smooth Without Bead, for Gas.

Fig. 391.
With Bead, for Steam and Water.

CROSSES.

Fig. 392.

Fig. 393.

The outlets of a Cross are always the same size.

COUPLINGS.

Fig. 394.
Right Hand.

Fig. 395.
Right and Left Hand.

TEES.

Fig. 396.

Fig. 397.

In describing Tees the run is first named, then the outlet, thus:

¼ above: ½⊥⅜—½×⅜×¼   ⅜ above: ½⊥½—½×⅜

STREET ELBOWS.

Fig. 398.
Male and Female Screw.

SUPPLIES
50 & 52 JOHN ST.
NEW-YORK

ELBOWS.

Inches.	Per lb.
*⅛	$0 25
*¼ × ⅛	25
¼	14
⅜ × ¼	14
⅜	14
½ × ⅜	14
½	12
*¾ × ⅜	12
¾ × ½	12
¾	12
1 × ½	12
1 × ¾	12
1	12
1¼ × ¾	12
1¼ × 1	10
1¼	10
1½ × ¾	10
1½ × 1	10
1½ × 1¼	10
1½	10
2 × 1¼	10
2 × 1½	10
2	10
2½ × 2	10
2½	10
3 × 2½	10
3	10
3½ × 3	10
3½	10
4 × 3½	10
4	10

STREET ELBOWS.

Male and Female Screw.

Inches.	Per lb.
½	$0 14
¾	14
1 × ¾	14
1	14
1¼ × 1	12
1¼	12
1½	12
2	12

TEES.

Inches.	Per lb.
* ⅛	$0 25
* ⅛ × ¼	25
* ¼ × ⅛	25
¼	14
* ¼ × ⅜	14
* ⅜ × ¼ × ¼	14
* ⅜ × ¼ × ⅜	14
* ⅜ × ⅛	25
⅜ × ¼	14
⅜	14

TEES—Continued.

Inches.	Per lb.
*⅜ × ½	14
*½ × ⅜ × ¼	14
*½ × ⅜ × ⅜	14
*½ × ⅜ × ½	14
½ × ⅜ × ¾	14
*½ × ¼	14
½ × ⅜	14
½	12
½ × ¾	12
*¾ × ⅜ × ½	12
*¾ × ⅜ × ¾	12
¾ × ½ × ¼	12
*¾ × ½ × ⅜	12
¾ × ½ × ½	12
¾ × ½ × ¾	12
*¾ × ½ × 1	12
*¾ × ¼	12
¾ × ⅜	12
¾ × ½	12
¾	12
¾ × 1	12
*1 × ⅜ × ¾	12
*1 × ⅜ × 1	12
1 × ½ × ½	12
*1 × ½ × ¾	12
*1 × ½ × 1	12
1 × ¾ × ⅜	12
1 × ¾ × ½	12
1 × ¾ × ¾	12
1 × ¾ × 1	12
*1 × ¾ × 1¼	12
1 × ¼	12
1 × ⅜	12
1 × ½	12
1 × ¾	12
1	12
1 × 1¼	12
*1¼ × ⅜ × 1¼	10
*1¼ × ½ × 1	10
*1¼ × ½ × 1¼	10
1¼ × ¾ × ¾	10
*1¼ × ¾ × 1	10
1¼ × ¾ × 1¼	10
*1¼ × 1 × ⅜	10
*1¼ × 1 × ½	10
1¼ × 1 × ¾	10
1¼ × 1 × 1	10
1¼ × 1 × 1¼	10
1¼ × ⅜	10
1¼ × ½	10
1¼ × ¾	10
1¼ × 1	10
1¼	10
1¼ × 1½	10
*1½ × ½ × 1½	10
1½ × ¾ × 1½	10
*1½ × 1 × 1	10
*1½ × 1 × 1¼	10

TEES—Continued.

Inches.	Per lb.
1½ × 1 × 1½	10
*1½ × 1¼ × ¾	10
1½ × 1¼ × 1	10
1½ × 1¼ × 1¼	10
1½ × 1¼ × 1½	10
1½ × ⅜	10
1½ × ½	10
1½ × ¾	10
1½ × 1	10
1½ × 1¼	10
1½	10
1½ × 2	10
2 × ½ × 2	10
2 × ¾ × 2	10
2 × 1 × 2	10
2 × 1¼ × 1½	10
2 × 1¼ × 2	10
2 × 1½ × 1¼	10
2 × 1½ × 1½	10
2 × 1½ × 2	10
2 × ½	10
2 × ¾	10
2 × 1	10
2 × 1¼	10
2 × 1½	10
2	10
2 × 2½	10
2½ × 1	10
2½ × 1¼	10
2½ × 1½	10
2½ × 2	10
2½	10
3 × 1¼	10
3 × 1½	10
3 × 2	10
3 × 2½	10
3	10
3½ × 2½	10
3½ × 3	10
3½	10
4 × 3	10
4 × 3½	10
4	10

CROSSES.

Inches.	Per lb.
¼	14
*⅜ × ¼	14
⅜	14
*½ × ⅜ × ¼	14
*½ × ⅜ × ⅜	14
*½ × ¼	14
*½ × ⅜	14
*½	14
*¾ × ⅜ × ½	14
*¾ × ½ × ⅜	14
*¾ × ½ × ½	14
¾ × ⅜	14

CROSSES—Continued.

Inches.	Per lb.
¾ × ½	14
¾	14
*1 × ½ × ⅜	14
*1 × ¾ × ⅜	14
*1 × ¾ × ½	14
*1 × ¾ × ¾	14
1 × ⅜	14
1 × ½	14
1 × ¾	14
1	14
*1¼ × 1 × ¾	12
*1¼ × 1 × 1	12
1¼ × ¾	12
1¼ × ½	12
1¼ × ¾	12
1¼ × 1	12
1¼	12
*1½ × 1¼ × 1¼	12
1½ × ½	12
1½ × ¾	12
1½ × 1	12
1½ × 1¼	12
1½	12
2 × ¾	12
2 × 1	12
2 × 1¼	12
2 × 1½	12
2	12
2½ × 2	12
2½	12
3 × 2	12
3 × 2½	12
3	12
3½	12
4	12

COUPLINGS.

Right Hand.

Inches.	Per lb.
⅛	$0 25
¼	14
⅜	14
½	12
¾	12
1	12
1¼	10
1½	10
2	10

Right and Left.

Inches.	Per lb.
¼	14
⅜	14
½	14
¾	14
1	12
1¼	12
1½	12
2	12

DROP TEES.

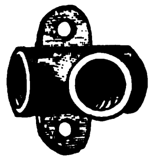


Fig. 399.—Female.

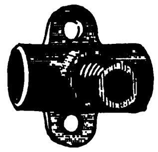


Fig. 400.—Male and Female.

DROP ELBOWS.

Flanges Right and Left.

Fig. 401.—Flange Left Side.

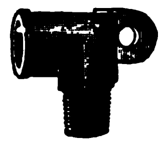


Fig. 402.—Flange Right Side.

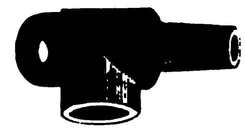


Fig. 403.—With Long Outlet Piece.

DROP ELBOWS.

Fig. 404.—Female.

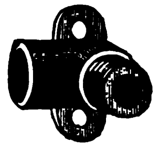


Fig. 405.—Male and Female.

ELBOWS.

Fig. 406.—With Side Outlet.

RETURN BENDS.

Fig. 407.—Open Pattern.

Fig. 408.—Close Pattern.

WASTENUTS.

Fig. 409.—Tinned.

EXTENSION PIECES.

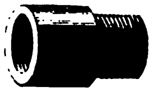


Fig. 410.—Male and Female.

PLUGS.

Fig. 411.

CAPS.

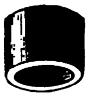


Fig. 412.

REDUCING COUPLINGS.

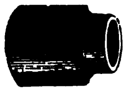


Fig. 413.

LOCKNUTS.

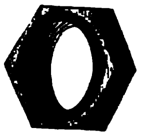


Fig. 414.

DROP TEES.

Female.

Inches.	Per lb.
⅜ × ¼ × ¼	$0 14
⅜ × ⅜ × ¼	14
⅜ × ⅜ × ⅜	14
½ × ¼ × ½	14
½ × ⅜ × ¼	14
½ × ⅜ × ⅜	14
½ × ½ × ¼	14
½ × ½ × ⅜	14
½ × ½ × ½	14
¾ × ½ × ¼	14
¾ × ½ × ⅜	14
¾ × ¾ × ¼	14
¾ × ¾ × ⅜	14
¾ × ¾ × ½	14
¾ × ¾ × ¾	14
1 × ¾ × ⅜	14
1 × 1 × ⅜	14
1 × 1 × ½	14

Male and Female.

¼ × ¼ × ⅜	14
⅜ × ¼ × ⅜	14
⅜ × ⅜ × ⅜	14
½ × ⅜ × ⅜	14
½ × ½ × ⅜	14
¾ × ½ × ⅜	14
¾ × ¾ × ⅜	14
1 × ¾ × ⅜	14
1 × 1 × ⅜	14

DROP ELBOWS.

(Figs. 401, 402, and 403.)

Inches.	Per lb.
¼ × ⅜	$0 14
⅜ × ⅜	14

(Fig. 404.)

¼ × ¼	14
⅜ × ¼	14
⅜ × ⅜	14
½ × ½	14
¾ × ¾	14

(Fig. 405.)

⅛ × ⅜	14
¼ × ⅜	14
⅜ × ⅜	14
½ × ⅜	14

ELBOWS WITH SIDE OUTLET.

Inches.	Per lb.
⅜ × ⅜ × ¼	$0 14
½ × ½ × ⅜	14
½ × ½ × ½	14
¾ × ¾ × ¾	14
1 × 1 × 1	14

RETURN BENDS.

All Sizes, ½ to 2½ inches, inclusive, per lb............$0 14

WASTENUTS.

Tinned.

Inches.	Per lb.
¼	$0 19
⅜	19
½	19
¾	19
1	19

EXTENSION PIECES.

Male and Female.

Inches.	Per lb.
⅜ × ⅜	$0 14

PLUGS.

Inches.	Per lb.
¼	$0 14
⅜	14
½	14
¾	14
1	14
1¼	12
1½	12
2	12

CAPS.

Inches.	Per lb.
¼	$0 14
⅜	14
½	14
¾	14
1	14
1¼	12
1½	12
2	12
2½	12

REDUCING COUPLINGS.

Inches.	Per lb.
¼ × ⅛	$0 25
⅜ × ⅛	25
⅜ × ¼	14
½ × ¼	14
½ × ⅜	14
¾ × ⅜	14
¾ × ½	14
1 × ⅜	14
1 × ½	14
1 × ¾	14
1¼ × ½	12
1¼ × ¾	12
1¼ × 1	12
1½ × ¾	12
1½ × 1	12
1½ × 1¼	12
2 × 1	12
2 × 1¼	12
2 × 1½	12
2½ × 1½	12
2½ × 2	12
3 × 2	12
3 × 2½	12

LOCKNUTS.

Inches.	Per lb.
¼	$0 14
⅜	14
½	14
¾	14
1	14
1¼	12
1½	12
2	12

FITTINGS FOR CAST IRON PIPE.

SIZES AND PRICES ON APPLICATION.

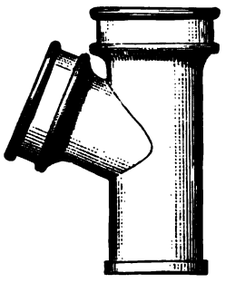


Fig. 415.
HALF Y BRANCH.

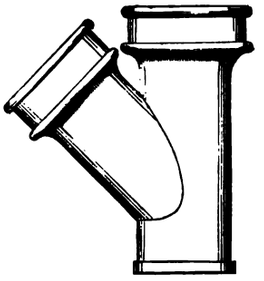


Fig. 416.
Y BRANCH.

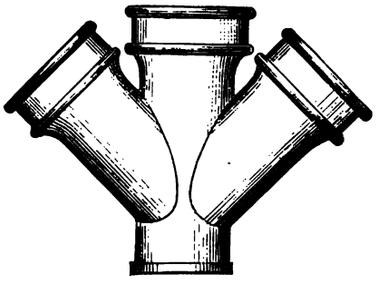


Fig. 417.
DOUBLE Y BRANCH.

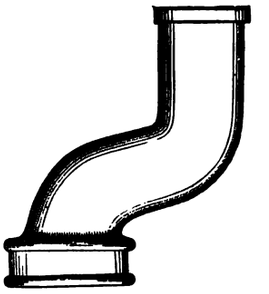


Fig. 418.
OFFSET.

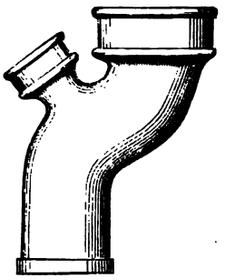


Fig. 419.
OFFSET WITH OUTLET.

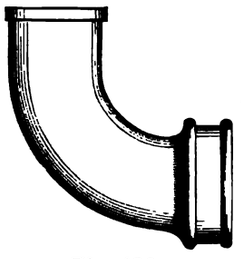


Fig. 420.
QUARTER BEND.

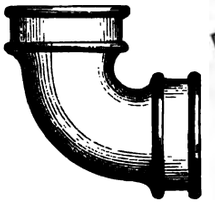


Fig. 421.
DOUBLE HUB, QUARTER BEND.

Fig. 422.
SIXTH BEND.

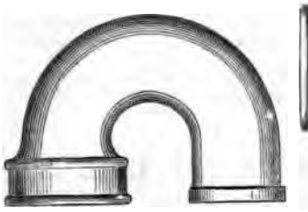


Fig. 423.
RETURN BEND.

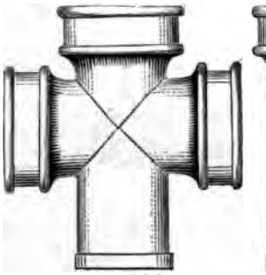


Fig. 424.
CROSS HEAD BRANCH.

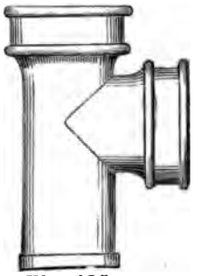


Fig. 425.
T BRANCH.

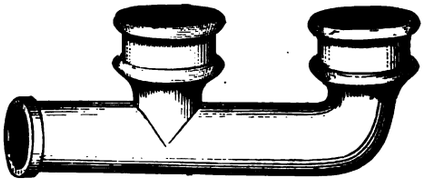


Fig. 426.
BATH TUB CONNECTIONS.

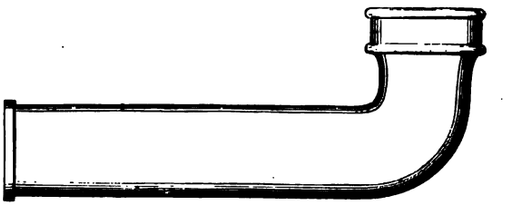


Fig. 427.
LONG BEND.

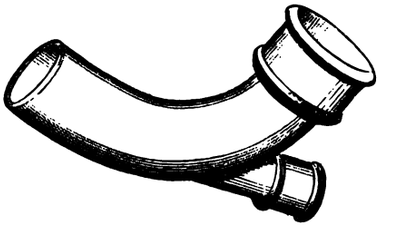


Fig. 428.
QUARTER BEND, WITH OUTLET.

Fig. 429.
STRAIGHT SLEEVE.

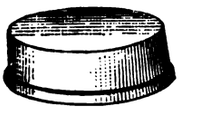


Fig. 433.
STOPPER OR PLUG.

Fig. 430.
REDUCING PIECE.

Fig. 431.
DOUBLE HUB.

Fig. 432.
SINGLE HUB.

Fig. 436.
DOCK HYDRANT.

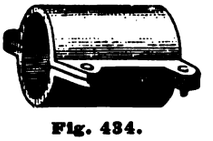


Fig. 434.
BAND.

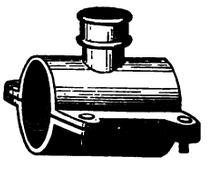


Fig. 435.
BAND, WITH OUTLET.

Prices for FIRE HYDRANTS, various styles, on application.

MANIFOLDS.

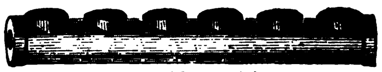


Fig. 437.—Plain.

Fig. 438.—Side Outlet.

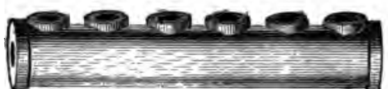


Fig. 439.—Large Run.

Fig. 440.—Back Outlet.

All Manifolds have left hand Taper Screws in the outlets, unless specially ordered, either with running or right hand Taper Screws.

They are also open at both ends, with *right hand* Taper Thread of same size as outlets, irrespective of size of body. Either or both ends, however, can be drilled out to take Screws the size of body, or any size less than the size selected as size of body.

Back or Side Outlets can be attached to any manifold pattern to order; but in ordering, care must be taken to describe the plan of attachment of Back or Side Outlets.

Back or Side Outlets of same size as Front Outlets will be charged as additional Front Outlets; other sizes proportionally.

No. of Outlets.	Size of Body.	2	3	4	5	6	7	8	10	12	14	16	18	20
For ¾ inch Tube, 2 inches, Centre to Centre	1 inch	$0 48	$0 60	$0 82	$0 92	$1 12	$1 26	$1 45	$1 85					
	1¼ "	58	76	1 05	1 25	1 50	1 70	1 85	2 12	$2 70				
	1½ "	86	1 02	1 25	1 45	1 70	1 90	2 25	2 80	2 95	$3 40	$4 35	$4 85	$5 40
For 1 inch Tube, 2½ inches, Centre to Centre	1¼ "	76	1 00	1 25	1 50	1 80	2 00	2 20	2 85	3 10				
	1½ "	88	1 15	1 45	1 90	2 00	2 25	2 55	3 45	4 15				
	2 "	1 26	1 65	2 00	2 25	2 60	2 95	3 15	4 12	4 80	5 20	6 00	7 40	8 30
	2½ "	1 60	2 00	2 50	3 40	3 60	4 15	4 70	6 00	7 00	7 90			
	3 "	2 45	3 00	3 60	4 20	4 85	5 50	6 20						
For 1¼ inch Tube, 3 inches, Centre to Centre	2 "	1 40	1 75	2 10	2 55	2 85	3 20	3 70						
For 1½ inch Tube, 3½ inches, Centre to Centre	2½ "	2 30	2 85	3 40	4 00	4 70	5 35	6 00						
For 2 inch Tube, 4½ inches, Centre to Centre	3 "	2 90	3 80	4 70	5 65	6 70	8 10	8 80						

MANIFOLD VALVES.

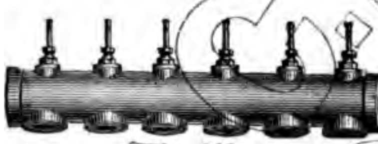


Fig. 441.

No. of Outlets.	Size of Body.	2	3	4	5	6	7	8	10
For ¾ inch Tube	1½ inch	$6 40	$9 00	$12 00	$16 00	$20 00	$21 25	$24 50	$29 25
" 1 " "	2 "	8 75	12 25	16 10	20 00	24 00	28 00	32 00	36 50

COIL STANDS.

PER PAIR.

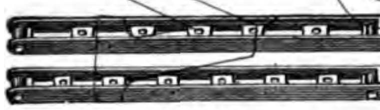


Fig. 442.

Size of Tube.	Centre to Centre of Pairs of Tubes. (No. of Tubes High.)	2	4	6	8	10	12	14	16	18	20	22	24
¾ inch.	4¼ inches	$0 36	$0 52	$0 68	$0 84	$0 90	$1 16	$1 32	$1 40				
1 "	5 "	43	62	85	1 05	1 45	1 70	1 80	1 95	$2 20	$2 25	$2 55	$2 80
1¼ "	6¾ "	76	1 02	1 62	2 29	2 80	3 40						
1½ "	7½ "	1 14	1 48	1 82	2 35	2 95	3 50						
2 "	9¾ "	2 40	3 00	3 60	4 20	4 80	5 40						

Fig. 443.
Hook Plate.

Fig. 444.
Single Hook.

Fig. 445.
Expansion Plate.

Fig. 446.
Ring Plate.

Fig. 447.
Single Ring.

HOOK PLATES.

Number of Hooks	1	2	3	4	5	6	7	8	9	10	12
Hook Plates for ¾ inch Pipe,	$0 10	14	20	28	40	50	66	70	80	90	
" " " 1 " "	12	16	26	36	46	56	67	76	86	1 00	1 20

EXPANSION PLATES.

Number of Hooks	1	2	3	4	5	6	7	8	9	10	12
Expans'n Plates for ¾ in. Pipe,	$0 16	21	30	40	50	64	76	88			
" " " 1 "	20	26	34	44	55	70	85	1 00			

RING PLATES.

Number of Hooks	1	2	3	4	5	6	7	8	9	10
Ring Plates for 1 inch Pipe	$0 20	30	40	50	61	75	90	1 03	1 16	1 35

SUPPLIES 50 & 52 JOHN ST. NEW-YORK

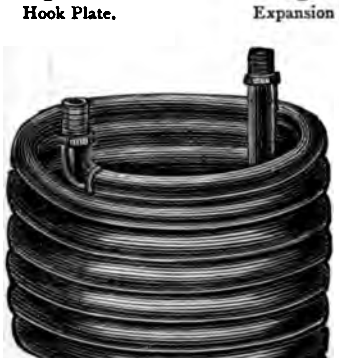


Fig. 448.—Heater Coil.

COIL HEATERS.

COMPLETE.

Size of Pipe, inch	½	¾	1	1¼	1½	2
Each	$15 00	20 00	25 00	40 00	60 00	125 00

HEATER COILS.

Size of Pipe, inch	½	¾	1	1¼	1½	2
Per Foot	$0 27	33	45	57	68	95

Fig. 449.—Coil Heater.

PIPE STAND.

Fig. 450.

¾ in. Pipe... $0 30
1 " ... 40

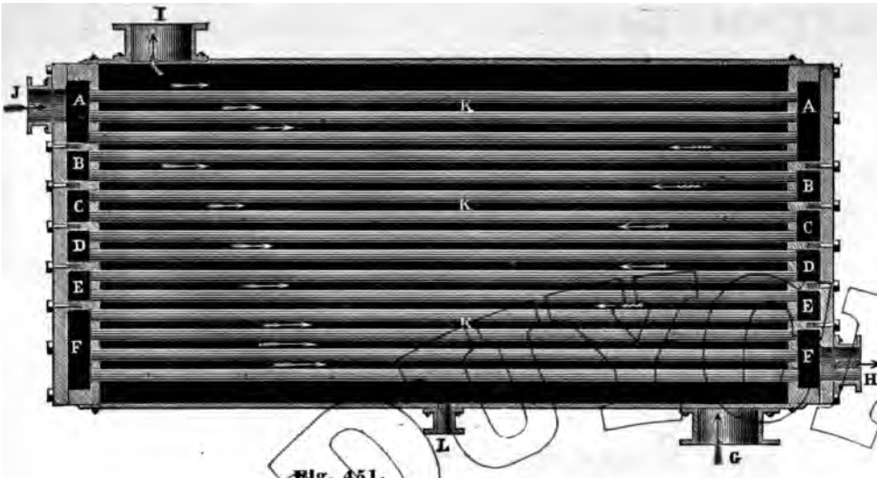


Fig. 451.

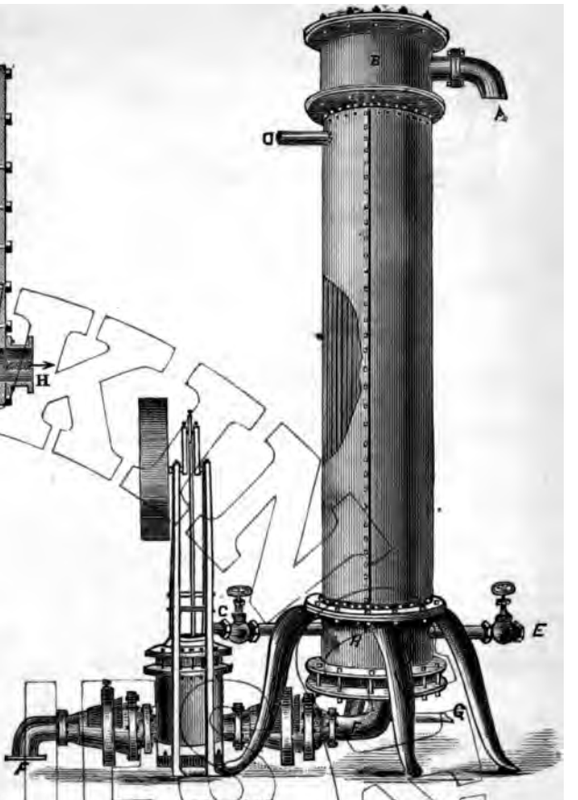


Fig. 452.
Showing Air Pump Applied.

BROWN'S PATENT IMPROVED FEED WATER HEATER.

FOR STEAM BOILERS.

After a long practical experience as consulting and constructing engineers, we have developed, to meet the wants of our local trade, a perfect and reliable Feed Water Heater for Steam Boilers, and are now prepared to make a specialty of this branch of our business, confident of having the best heater ever offered in market, and invite the attention of all interested in the use of steam power to its practical merits for heating the feed water for Steam Boilers; also for heating water for print works, dye works, bleacheries, woolen mills, and by exhaust steam from engine.

Fig. 451 is a sectional view of heater, showing the construction of the chambers, A, B, C, D, E, F, which return the water into the tubes, through which the water passes back and forth, as indicated by the arrows placed on top of the tubes; the exhaust steam from the engine being connected at G, fills the cylinder and surrounds the tubes K. Being exhausted at I, the feed water from the pump enters at I, and passing back and forth through the tubes K, is discharged at H. The condensed steam falling to the lower side of cylinder, is conducted to hot well by a pipe attached at L. The tubes are deflected from a straight line half their diameter, as shown at N; the object of this deflection is to prevent any undue strain that might be caused by the expansion and contraction of the said tubes from the unequal temperatures, from loosening or in any way affecting the tubes when expanded into the cast iron heads.

Horse Power.	Diameter, in.	Length of Tubes.	Number of Tubes.	Price.
20	16	2 feet.	29	$150 00
30	16	2½ "	29	175 00
40	16	3½ "	29	235 00
50	16	4½ "	29	275 00
60	16	5½ "	29	300 00
70	20	3½ "	51	350 00
80	20	4 "	51	400 00
90	20	4½ "	51	450 00
100	20	5 "	51	500 00
150	24	4 "	72	600 00
200	24	5½ "	72	725 00
300	24	8 "	72	900 00

HODGINS' LIME EXTRACTOR AND CONDENSING HEATER.

(Fig. 452.)

The principle of this Improved Condensing Heater is the tendency of heat, under all circumstances, to rise; the top of the apparatus will always be the hottest point, at which place the feed water leaves on its passage to the boiler. It comes in at the bottom cold, at C, absorbs the heat there, and, as it is pumped up, continues to absorb the increasing heat, till it arrives at the outlet pipe D, where its temperature is equal to that of the exhaust steam. Now, when water is raised to such a high degree of temperature, it has expanded or lost the specific gravity at which it holds nearly all foreign matters in solution; it will have been depositing them all the way up, as the temperature increases; and, by the time it has arrived at the top, there will be little or no impurity remaining; the only foreign matters which can then be held in solution being the very finest particles of lime and sodium, and these can only be removed by distillation. This deposit is blown off once a day through the pipe E, and requires only a minute's work by the engineer, who, by strictly attending to it, will keep both the condenser and the boiler clean.

We would also particularly call attention to the advantage of using our Heater as a Condenser, by using an Air Pump.

When an engine is deficient in power, and sufficient water can be had, the Condensing Heater can be relied on to give at least twenty per cent more power without increased consumption of fuel, and when economy of fuel is an object, from twenty to thirty per cent can readily be gained, as the Heater gives a vacuum of from twenty-six to twenty-eight inches, and the temperature to the feed water of from one hundred and sixty to two hundred degrees, according as the exhaust steam is more or less dry.

The working of the Condenser will be readily understood by referring to the cut.

The exhaust steam enters at A, passes to the chamber B, then down through the inside of tubes to condensing chamber H, where it comes in contact with a jet of cold water, that enters at G, and is instantly condensed and forms a vacuum. The condensing water, together with the condensed steam, is pumped out through the pipe F by the pump C. The feed water is pumped in at F, rises around the tubes until it reaches the outlet pipe D; it has now acquired a temperature equal to the exhaust steam, and passes to the boiler.

WITHOUT AIR PUMP.

Horse Power.	No. of Tubes.	Price.
10	30	$175 00
20	50 to 60	275 00
40	90 to 100	385 00
60	120	560 00
80	150	560 00
100	220	775 00

Tubes all five feet long.

GOOGLE KNOWLEDGE SUPPLIED BY NEWSBANK

STEAM TRAPS.

ALBANY STEAM TRAP.

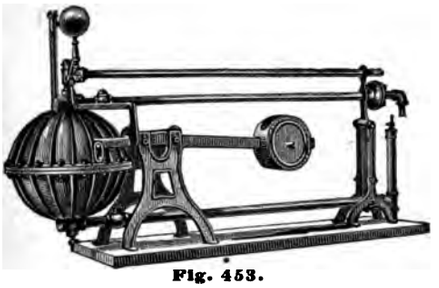


Fig. 453.

The "Albany Steam Trap" is a mechanical device which is convertibly either a Steam Trap or Boiler Feeder.

As a Steam Trap it returns the water of condensation from the heating coils or pipes to the boiler, whether the same are *above* or *below* the water level in boiler.

As a Boiler Feeder it will also supply any deficiency of water to the boiler.

We manufacture two sizes of Traps. The small size (which we style No. 2) holds about five gallons, and is capable of draining and returning to the boiler, automatically, the water of condensation from three thousand five hundred running feet of inch pipe. The price of this size is $100. The large size (styled No. 1) is of double capacity and power. The price is $150.

JONES' IMPROVED SELF-REGULATING STEAM TRAP.

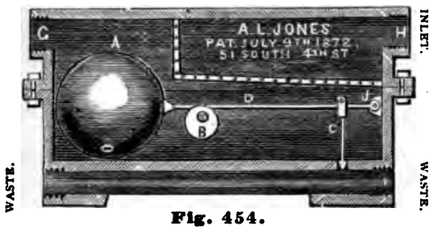


Fig. 454.

CAPACITY FOR ORDINARY HEATING.

No. 1 will answer for fifteen hundred feet of one inch pipe.

No. 2 will answer for three thousand feet of one inch pipe.

No. 3 will answer for five thousand feet of one inch pipe.

No. 4, for sugar houses and large factories where there is a large condensation, or where a whole building is wasted through one trap, will answer for eight thousand feet of one inch pipe.

Nos. 1 and 2, the inlet and outlet, is one inch standard gas thread; No. 3 is one and a half inch, and No. 4 two inches.

No. 1, each	$35 00
" 2, "	40 00
" 3, "	60 00
" 4, "	75 00

BROWN'S PATENT IMPROVED STEAM TRAP.

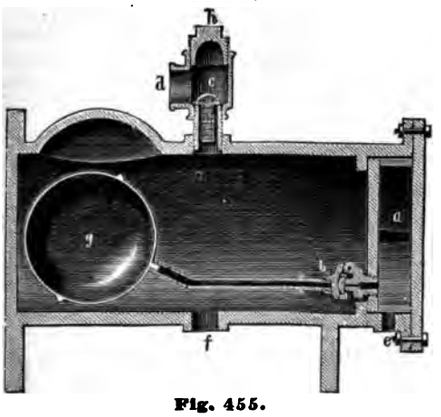


Fig. 455.

No.	1	2	3
Will drain square feet surface	1400	3500	6500
Price	$25 00	35 00	65 00

WILSON'S IMPROVED STEAM TRAP.

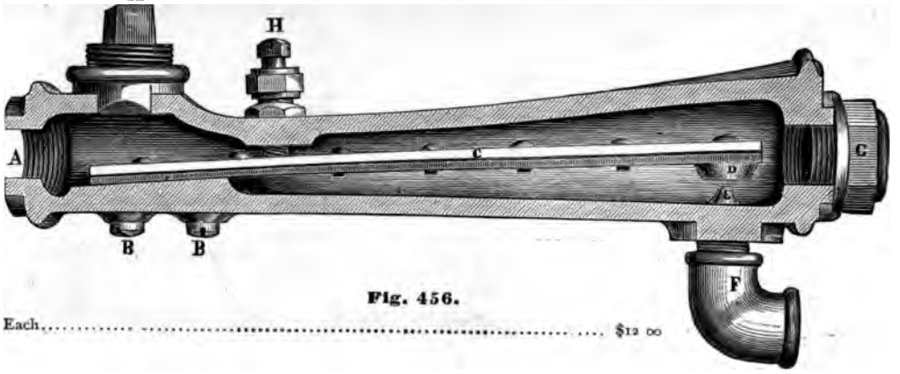


Fig. 456.

Each..... $12 00

NASON'S IMPROVED STEAM TRAP.

Fig. 457.

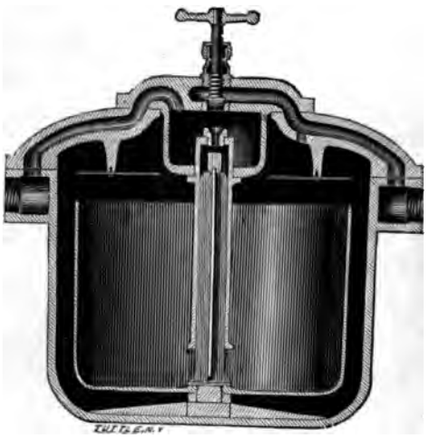


Fig. 458.

No. of Steam Trap	1	2	3	4	5
Size of Pipe Connections, inches	½	¾	1	1¼	1½
Diameter of Cylinder, "	8	10½	12	14	18
Height to top of Cover, "	8	10	12	14	15½
Greatest number of square feet of surface to which it should be applied	350	900	1400	2000	3500
Price	$16 00	20 00	27 50	35 00	65 00

HAWES' STEAM TRAP.

Fig. 459.

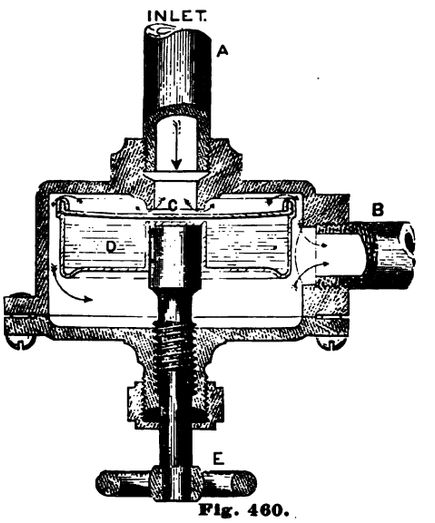


Fig. 460.

No.					
1	To Drain 1000 feet	1	inch	Pipe	$10 00
2	" 2000 "	1	"		15 00
3	" 4000 "	1	"		20 00
4	" 7000 "	1	"		25 00
5	" 10000 "	1	"		30 00

OIL CUPS.

BEST STEAM METAL.

Fig. 461.

Fig. 462.

Fig. 463.

GLOBE OIL CUPS.

WITH AIR COCK.

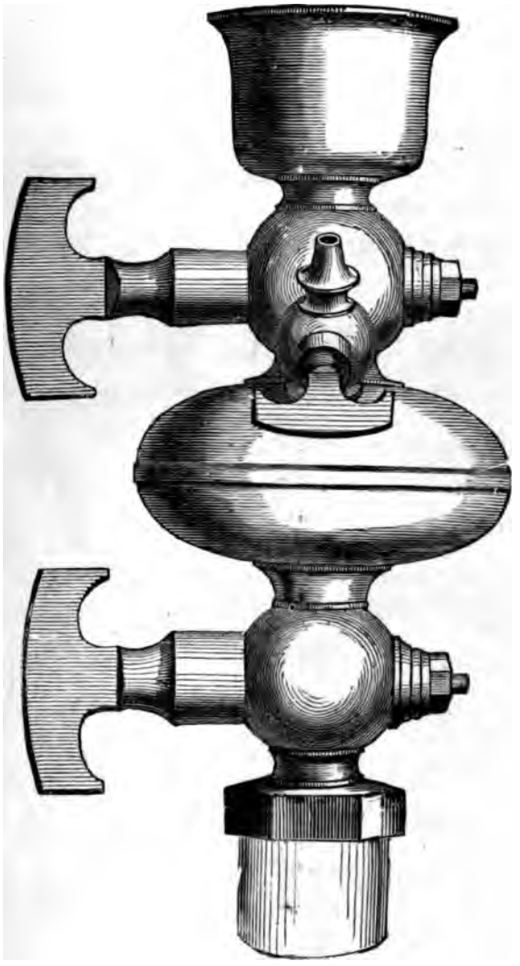


Fig. 464.

Number.	Diameter of Globe.	Screwed for Pipe.	Each, Fig. 464.	With Valves.
00	1⅝	⅜	$3 25	
0	1⅞	½	3 50	
1	2⅛	½	4 00	
2	2½	½	4 75	
3	2⅞	¾	5 50	$8 00
4	3¼	¾	7 25	10 00
5	3⅞	¾	12 00	16 00
6	4¼	1	15 00	20 00

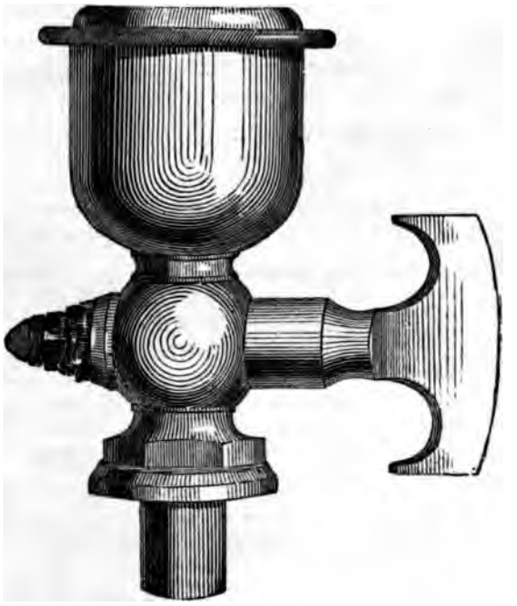


Fig. 465.

PER DOZEN.

Number.	Diameter Top.	Screwed for Pipe.	Plain, Fig. 462.	Tee Handle, Fig. 465.	Lever Handle, Fig. 463.	New Style, Plain, Fig. 461.
000	¾	⅛	$3 00			$4 25
00	⅞	¼	3 50			
0	1	¼	4 00	$10 00	$12 00	5 00
1	1⅛	¼	5 75	12 00	14 00	6 00
2	1⅜	⅜	7 00	15 00	18 00	7 50
3	1⅝	⅜	9 50	18 00	21 00	
4	1⅞	½	12 50	24 00	27 00	
5	2	½	16 00	30 00	33 00	
6	2⅜	¾	24 00	36 00	39 00	
7	2⅞	¾	33 00			
8	3⅛	¾	42 00			

NATHAN & DREYFUS' PATENT SELF-ACTING LUBRICATORS.

FOR STEAM CHESTS AND CYLINDERS OF ALL KINDS AND SIZES.

PATENT OCTOBER 27, 1863, AND JANUARY 19, 1869.

Fig. 466.—WITH GLASS INDICATOR.

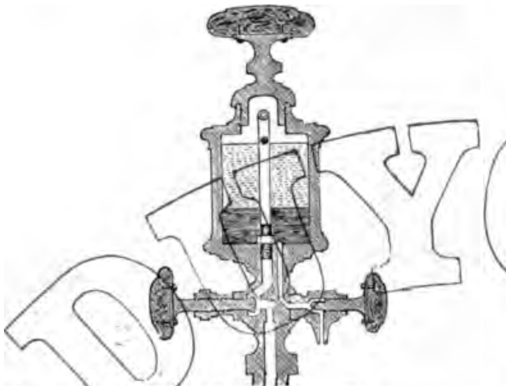


Fig. 467.—INTERIOR VIEW.

Fig. 468.—PLAIN, WITHOUT YOKE.

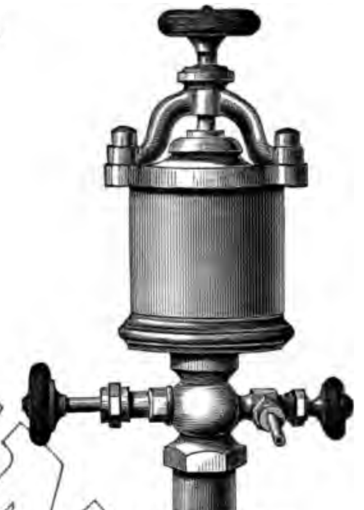


Fig. 469.—WITH YOKE.

Size, Inches	1	1½	2	2½	3	4	5	6	7
Plain	$4 00	6 00	8 00	10 00	12 00	16 00			
" with Glass Indicator			10 00	12 00	15 00	20 00			
With Yoke					20 00	27 00	36 00	45 00	60 00

SELF-OILERS.

LOCOMOTIVE CUPS.

DESIGN (AS SEEN IN CUT OF NO. 42).—PATENTED MARCH 30, 1869.

No. 42.
Nos. 20 to 100, Shell Cased.
Fig. 470.

Are Shell-Cased, made very ornamental, constantly exposing the oil to view, and are generally considered the best ever used.

	Capacity.	Diameter.	Height.	Per Doz.
No. 28—Shell Case, for Small Connections	¼ oz.	1½ in.	2½ in.	$36 00
" 36— " Eccentrics	1 "	2 "	3½ "	48 00
" 42— " Connecting Rods	1¼ "	2 "	4 "	48 00
" 42— " Guides with Steel Spindle and Spring	1¼ "	2 "	4 "	48 00
" 43— " Regulators with Valve and Set Screw, to feed as required	1¼ "	2 "	4 "	56 00

The Rod Cups will run from fifteen to eighteen hundred miles with one filling, and the Guide Cups seven hundred to a thousand miles.

We call special attention to our No. 43.

NEW LOCOMOTIVE GUIDE CUPS,

which can also be used on Cross-head of Stationary Engines.

These Cups have a Regulating Valve which can be set from the outside to feed any required quantity of oil, with the most perfect exactness. They can also be filled through a hole in the top without disturbing the regulating device, and do not feed except when the engine is in motion.

No. 60.
No. 30 to 150, Skeleton.
Fig. 471.

ENGINE CUPS—SHELL CASED.

	Capacity.	Diameter.	Height.	Per Doz.		Capacity.	Diameter.	Height.	Per Doz.
No. 20	1/16 oz.	1 in.	1½ in.	$15 00	No. 42	1¼ oz.	2 in.	4 in.	$48 00
" 21	⅛ "	1⅜ "	2¼ "	24 00	" 60	2½ "	2⅜ "	4¼ "	60 00
" 28	¼ "	1½ "	2½ "	36 00	" 72	2 "	3 "	4½ "	72 00
" 36	1 "	2 "	3½ "	48 00	" 100	1 qt.	5¾ "	10 "	240 00

ENGINE CUPS—SKELETON.

A to D.
Fig. 472.

	Capacity.		Diameter.	Height.	Per Doz.
No. 30	¼	oz.	1¾ in.	2½ in.	$30 00
" 46	1	"	2¼ "	3½ "	48 00
" 48	1¼	"	2⅜ "	3¾ "	48 00
" 54	1	"	2¼ "	3⅜ "	54 00
" 60	1¼	"	2½ "	3¾ "	60 00
" 72	2	"	2¾ "	4½ "	72 00
" 76	4½	"	3⅜ "	5½ "	84 00
" 80	8	"	3¾ "	5½ "	96 00
" 90	14	"	5 "	7¼ "	144 00
" 150	3	pts.	6¼ "	8½ "	240 00
" 32—Iron Mounted	8	oz.	4½ "	6 "	42 00
Crank-pin Cups for Upright Engines to order.					
A	⅜	"	1⅝ "	2½ "	16 00
B, Small	¾	"	3 "	3 "	20 00
B	1⅛	"	2⅛ "	3½ "	24 00
C	3	"	2⅞ "	4½ "	32 00
D	8	"	3½ "	5¼ "	40 00

N. & D. SELF-ACTING OILERS.

No. 13—W. B.
Fig. 473.

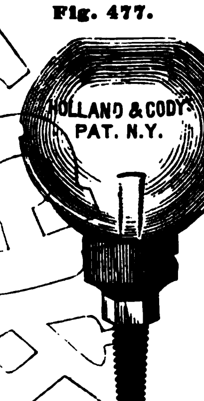
Nos. 24 and 26.
Fig. 474.

No. 9.
Fig. 475.

Nos. 15 and 22.
Fig. 476.

No. 10.
Fig. 477.

No.		Capacity.	Diameter.	Height.	Per Doz.
No. 0	For Cards, Looms, Lathes, or for Small Journals	1 oz.	2 in.	2¼ in.	$7 50
" 00	" Card Cylinders, Strippers, and Compact Connections	¾ "	1⅛ "	2⅛ "	7 50
" 3	" " " " " " " to fill from top,	¾ "	1⅛ "	2⅛ "	9 00
" 9	" Shaftings, Pickers, Looms, and Fans	1½ "	2½ "	3¼ "	9 00
" 9	W. B., for Compact Shaftings or Connections	1½ "	1¾ "	3¼ "	9 00
" 10	For Shaftings, Pickers, Looms, and Fans	3½ "	2¼ "	4¼ "	9 90
" 10	W. B., for Compact Shaftings or Connections	3 "	2 "	4½ "	9 00
" 11	For Shaftings or Connections where the Cups are required to be screwed in,	1½ "	2½ "	3¼ "	12 00
" 12		3½ "	2½ "	4½ "	12 00
" 13	To fill from top	1½ "	2½ "	3¼ "	10 50
" 13	W. B., to fill from top	1½ "	1¾ "	3¼ "	10 50
" 14	" " " "	3½ "	2⅝ "	4½ "	12 00
" 15	For Engines or Connections, to fill from top	3½ "	2⅝ "	4⅛ "	15 00
" 16	" Small Connections, " "	⅜ "	1⅜ "	2 "	12 00
" 18	" Upright Shafts	3½ "	2⅝ "	4½ "	24 00
" 22	" Small Engines or Lathes	¾ "	1½ "	2⅝ "	12 00
" 23	" Fast Running Small Engines or Lathes	⅛ "	1¼ "	1⅝ "	12 00
" 24	" Engines	2¼ "	2¼ "	3½ "	15 00
" 25	" Heavy Bearings or Pillow Blocks	8 "	3 "	6 "	27 00
" 26	" Small Engines	¾ "	1¾ "	2¾ "	12 00



No. 3—Represents 2, 3, and 6.
Fig. 479.

LOOSE PULLEY CUPS WITH HOLLOW WIRES.

No.	Capacity.	Diameter.	Height.	Per Doz.
No. 22	⅜ oz.	1½ in.	2⅝ in.	$15 00
" 23	⅛ "	1¼ "	1⅝ "	15 00

HOLLAND'S PATENT SELF-OILERS.

(Figs. 478, 479, 480, and 481.)

No.		Diam.	Height.	Per Doz.
1	—For Shafting, plain Stems	2⅝	3¼	$6 00
2	— " Small Shafting, Carding Machines, Spinning Frames, Screw Stems	1¾	2¼	9 00
2½	— " Main Bearings of Carding Machines and Spinning Frames	2	2¼	9 00
3	— " Ordinary and Counter Shafting, Screw Stems	2½	3¼	9 00
4	— " Upright Shafting and Wall-Box Bearings, Oblique	2½	3⅜	12 00
5	— " Loose Pulleys	1¾	2¼	12 00
6	— " Large Shafting	3⅜	4⅝	18 00
7	—Suitable for Bearings where Cup is required to be filled and regulated from top	1½	2⅝	12 00
7½	—For Bearings where Cup is required to be filled and regulated from top	2	2⅝	15 00
8	—For Bearings where Cup is required to be filled and regulated from top	2⅓	3¼	18 00
8½	—For Bearings where Cup is required to be filled and regulated from top	2¼	3¾	21 00

No. 7—Represents 7, 7½, 8, and 8½.
Fig. 480.

ENGINE OILERS.

No.		Diam.	Height.	Per Doz.
10	—For Stationary and Marine Engines	1 5-16	2 5-16	$16 00
11	— " " " " "	2⅝	3⅜	24 00
12	— " " " " "	3	4⅛	36 00
13	— " " " " "	3⅞	6¼	60 00

LOCOMOTIVE OILERS—With Brass Protection, keeping the Oil exposed to view.

No.		Diam.	Height.	Per Doz.
14	—For Small Connections	1⅞	2¾	$24 00
15	— " Guide Bars and Connection Rods	2⅛	4	36 00

NEW ENGINE CUPS.

No.		Diam.	Height.	Per Doz.
16	—For Stationary or Marine Engines	1 5-16	2 5-16	$12 00
17	— " " " "	1 7-16	2¾	15 00
18	— " " " "	2 1-16	3⅜	18 00
19	— " " " "	2½	3 1-16	21 00
20	— " " " "	3	4½	24 00
21	— " " " "	3 7-16	5¼	27 00
22	— " " " "	3⅞	6¼	30 00

NEW ENGINE CUP.
No. 18—Represents 16, 17, 18, 19, 20, 21, and 22.
Fig. 478.

No 10 Represents 10, 11, 12, and 13.
Fig. 481.

Fig. 482.

PATENT COMPOUND CUPS.

	Per Doz.
No. 23—Tin, Suitable for Wood Working Machinery	$8 00
" 24—Weight, suitable for Small Shafting	10 00
" 25— " " " Ordinary "	12 00
" 26—Brass, " " Loose Pulleys, Spinning Frames, Carding and Wood Working Machinery	8 00
" 27—Brass, suitable for Loose Pulleys, Spinning Frames, Carding and Wood Working Machinery	12 00
" 28—Stationary Engines	18 00
" 29— " "	24 00
" 30— " "	36 00
" 31—Engine, Spun Top	12 00
" 32— " " "	15 00
" 33— " " "	18 00
" 34— " " "	21 00
" 35— " " "	24 00
" 36— " " "	27 00
" 37—Locomotive, Brass Protection	24 00
" 38— " " "	36 00

In ordering Cups, send size of hole in journal and depth of caps, with full description, and the purpose for which the machinery is used.

THE THOMPSON OIL CAN.

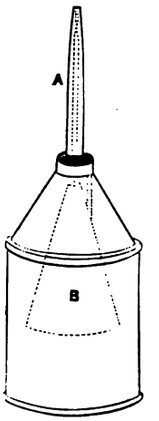


Fig. 483.

Fig. 484.

For Orders less than ½ Gross, per dozen	$5 25
For Orders from ½ Gross to 1 Gross, per dozen	5 00
For Orders exceeding 1 Gross, per dozen	4 75
Tubes without Cans, each	20

GEE'S PATENT OIL CUPS.

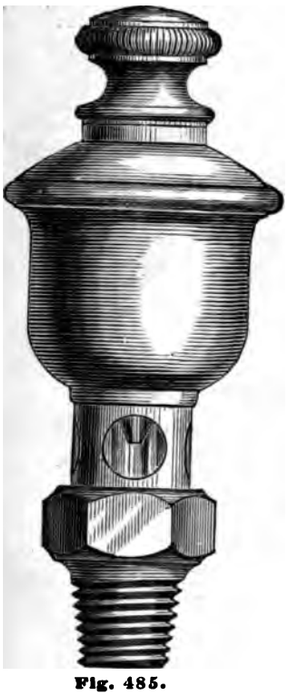


Fig. 485.

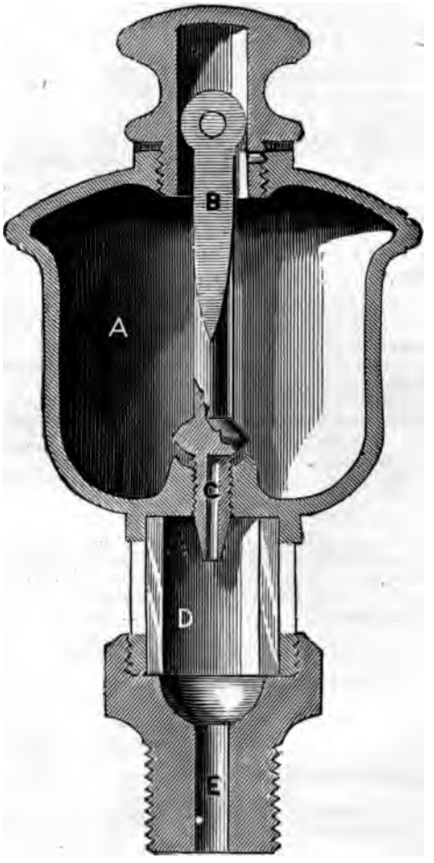


Fig. 486.

Fig. 487.

	BRASS CASE.						TRANSPARENT CASE.					
No.	0	1	2	3	4	5	6	7	8	9	10	11
Screwed for Pipe	¼	⅜	½	½	½	¾	¼	⅜	⅜	½	½	¾
Per Doz.	$18 00	24 00	33 00	45 00	60 00	72 00	$21 00	27 00	36 00	48 00	63 00	78 00

PATENT COMPOUND LOCOMOTIVE CYLINDER OILER.

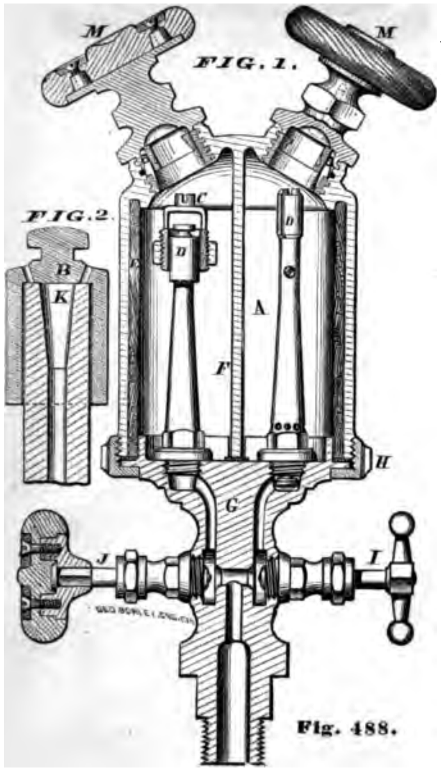


Fig. 488.

A Lubricator that will supply Oil or Tallow to the Steam Chest of a Locomotive whether steam be on or off; and especially to operate when going *down grade.*

Provision is also made to prevent congealing of the Tallow in very cold weather, by surrounding the oil chamber internally with a non-conducting wall of wood.

By reference to the cut Fig. 1 it will be seen that the oil chamber, *A*, is divided into two compartments by a central wall or partition, *F*, cast in one piece with the sides. This form of construction enables it to be used on one side as an ordinary condensing cup, when a full head of steam is turned on, and as a Vacuum Cup on the opposite side, when steam is entirely shut off, as in going down grade. *M M* are the hinged caps opening into the chambers. *B* is the valve which regulates the flow of oil in the condensing tube, *K*, as shown at Fig. 2. *C* is the nut which regulates the *lift* of the valve *B*. *D* is the nut which governs the *fall* of the Vacuum Valve in the opposite chamber. *E* is the wooden partition which lines the sides of the chambers and prevents excessive cold from striking through and congealing the tallow. *This is an invaluable feature, and does its work perfectly.*

The heat from the steam in the condensing chamber passes through the metal partition, *F*, and keeps the Vacuum Chamber thoroughly heated up. *J* is a *wood* handle to the side screw which operates the throttle valve on the condensing chamber, while *I* is a *brass* handle to the valve on the Vacuum Chamber.

DIRECTIONS FOR USING THE COMPOUND LUBRICATOR.

To fill the Chambers either Cap is unscrewed half way, when the handle can be tilted back at right angles on its hinge, exposing a full opening for the admission of tallow or oil, without entirely removing the cap from its place. In closing, the handle is turned to an upright position, the lug, *L*, springs into the slot, and the whole screwed down as before.

On the condensing side the lift of the Valve, *B*, and the quantity of oil fed is regulated by screwing the nut, *C*, up or down in the bridge piece, as shown in cut. The oil feeds through a small opening in the *top* of the valve-head.

The water of condensation which is formed, floats the lubricant at the proper level until it is all consumed.

Before refilling the Cup, draw off the water and other impurities through vent cock, *F*.

To regulate the flow of oil through the Vacuum tube, adjust the nut *D* by screwing up or down by means of a screw-driver, through the opening at top.

Diameter of Cup	3	3½	4
Screwed for Pipe	¾	1	1
Capacity	¾ pt.	1¼ pt.	1 qt.
Each	$14 00	16 00	20 00

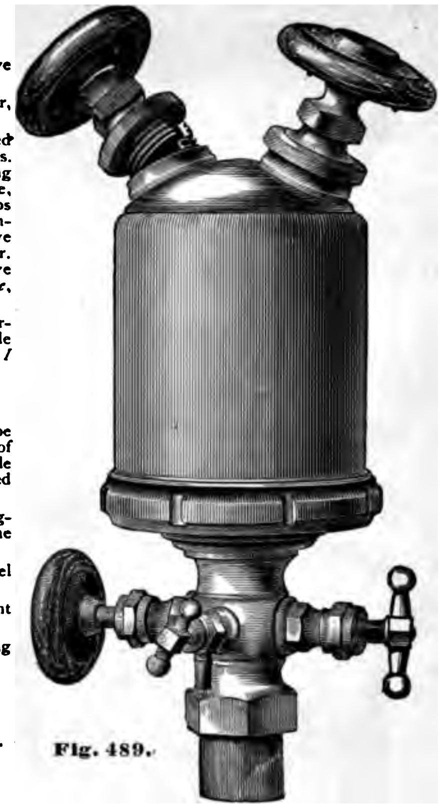


Fig. 489.

PATENT "STAR" LUBRICATOR WITH SAFETY CAP.

Fully a saving of one half the oil used in ordinary Lubricators.

The "STAR" LUBRICATOR is constructed especially for the convenience of Engineers, as the Cap can be unscrewed from the Neck for the purpose of refilling, and yet be retained in place—doing away with the annoyance of dropping or losing the same.

The Valve is automatic and regular in its action.

They are the best, the cheapest, and the most economical Lubricators ever invented.

To fill the Chamber, the Cap is unscrewed half-way, when the handle can be tilted back at right angles on its hinge, exposing a full opening for the admission of tallow or oil, without entirely removing the Cap from its place. In closing, the handle is returned to an upright position, the lug, *L*, springs into the slot, and the whole screwed down as before.

The lift of the Valve, *D*, and the quantity of oil fed is regulated by screwing the nut, *E*, up or down in the bridge piece as shown in cut. The oil feeds through a small opening in the *top* of the valve-head.

The water of condensation which is formed, floats the lubricant at the proper level until it is all consumed.

Before refilling the Cup, draw off the water and other impurities through vent cock, *F*.

COMMON LUBRICATOR.

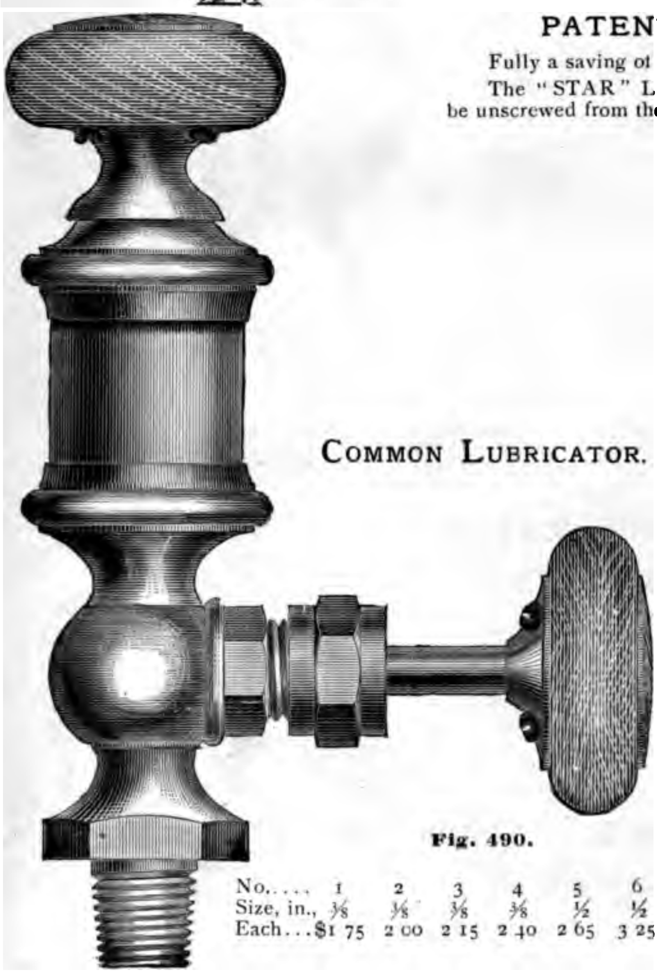


Fig. 490.

No.	1	2	3	4	5	6
Size, in.,	⅜	⅜	⅜	⅜	½	½
Each	$1 75	2 00	2 15	2 40	2 65	3 25

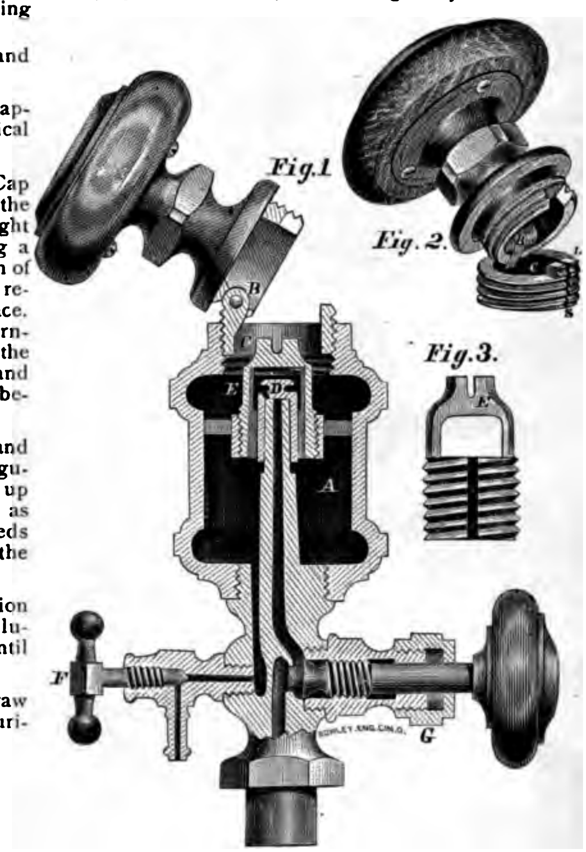


Fig. 491.

BEST STEAM METAL—WITH CONDENSING TUBE, REGULATING NUT, AND SAFETY CAP.—(Fig. 491.)

Size, inches, diameter of Cup	1	1¼	1½	1¾	2	2½	3	3½	4
Size of Shank, Pipe Threads	¼	¼	⅜	⅜	½	¾	¾	1	1
Capacity	1½ oz.	1¾ oz.	2 oz.	2½ oz.	¼ pt.	½ pt.	¾ pt.	1¼ pt.	1 qt.
Price, each	$4 00	5 00	6 00	7 00	9 00	11 50	14 00	19 00	24 00
" without Regulating Nut	3 00	4 00	5 00	6 00	7 00	8 50	10 50	14 00	
" " Condensing Tube	2 50	3 00	3 50	4 00	5 00	7 00	10 00		

BROUGHTON'S PATENT LUBRICATORS.

(Fig. 492.)

Size, inch.	1½	2	2½	3	4
Screwed for Pipe	⅜	½	¾	¾	1
Each	$4 00	6 00	9 00	12 00	16 00
With Yoke		8 00	12 00	16 00	21 00

Fig. 492.

THE EAGLE OIL CUP.

(Fig. 493.)

No. 1	$3 00
" 2 (Size of Engraving)	5 00
" 3	6 00
" 4	8 00
" 5	10 00
" 6	15 00

Fig. 493.

PATENT OPEN TOP LUBRICATORS,

FOR SUET OR OIL.

(Fig. 494.)

Diameter of Top	1¼	1½	2	2½	3	4	5
Each	$4 75	5 50	8 00	9 50	12 00	18 00	25 00
Disks for same	15	20	25	40	50	60	75

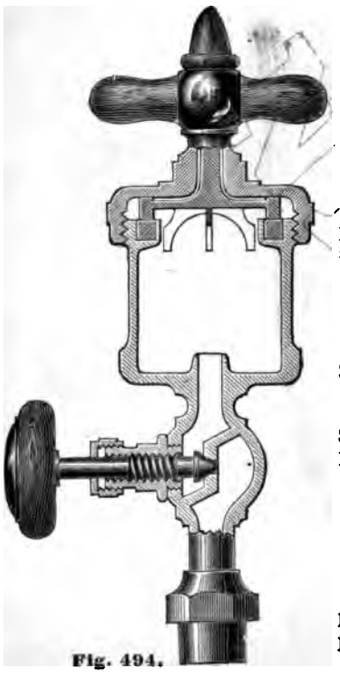


Fig. 494.

STORER'S PATENT OPEN TOP SUET LUBRICATOR.

(Fig. 495.)

Size, inch	1½	2	2½	3	4	5	6	7
Each	$7 00	8 00	10 00	12 00	18 00	23 00	28 00	33 00

Fig. 495.

GEE'S LUBRICATOR.

No.	0	1	2	3	4
Each	$10 00	12 00	14 00	18 00	24 00

SIEBERT'S EUREKA LUBRICATOR.

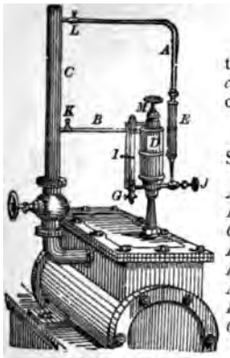


Fig. 496.

THE WORKING PRINCIPLE.

When the condensing and discharge pipes are connected with the steam pipe, the pressure in *both pipes is equal;* but the ***condensing pipe*** has a *perpendicular height, containing a column of water above the discharge pipe,* which is the *pressure* to *force* the oil *out* of the cup.

DESCRIPTION OF THE CUT,

Showing the working of the cut, and the manner of connecting to steam pipe.

A is the condensing pipe.
B, The discharge pipe.
C, The steam pipe from the boiler.
D, The oil cup.
E, The reservoir for condensed water.
M, Plug through which to refill the cup.
I, Sliding gauge on the glass tube.
G, Waste cock to draw off the water when the cup is to be refilled.
L, The valve to admit steam into the condensing pipe.
J, Valves to feed the condensed water under the oil.
K, The valve to shut off the supply of oil when the engine is stopped.

There is also a check valve on pipe *B*, to prevent steam from entering the cup.

SIZES OF LUBRICATORS, AND CAPACITY OF ENGINES FOR WHICH THEY ARE ADAPTED.

Size of Cup	½ pint.	1 pint.	1 quart.	½ gallon.
Horse Power of Engine	25 or less.	150 or less.	300 or less.	300 or over.
Brass Finished	$25 00	45 00	55 00	70 00
Nickel Plated	28 00	50 00	60 00	75 00

EXCELSIOR LUBRICATOR.

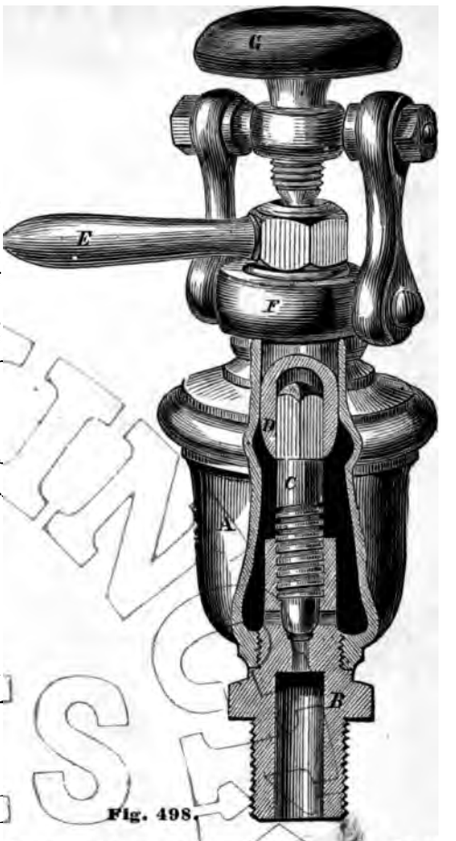


Fig. 498.

HODGE'S PATENT LOOSE PULLEY OILER.

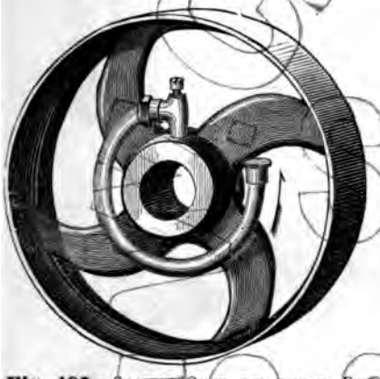


Fig. 497.—SHOWING OILER ATTACHED TO PULLEY.

Size of Brass Tube, inch.	Inside Diam. of Oiler, inch.	Per dozen.
½	2½	$10 80
½	3	11 40
½	3½	12 00
½	4	12 60
⅝	4	13 80
⅝	4½	14 40
⅝	5	15 00
⅝	5½	15 60
⅝	6	16 20
⅝	7	17 50

Larger sizes to order.

No. 1—For Engines of	5	to	10	Horse Power		$7 50
" 2— " "	10	to	15	"	"	9 00
" 3— " "	15	to	20	"	"	10 00
" 4— " "	20	to	40	"	"	15 00
" 5— " "	40	to	80	"	"	20 00
" 6— " "	80	to	100	"	"	30 00

BROUGHTON'S OPEN TOP OIL CUPS.

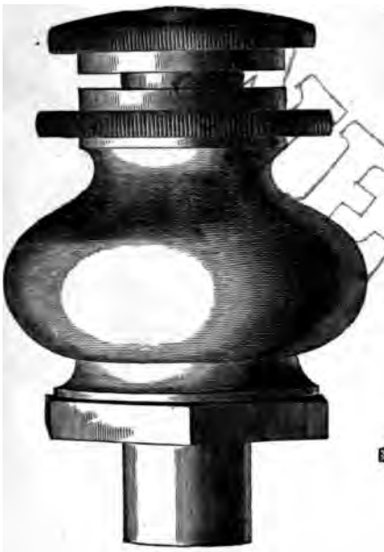


Fig. 499.

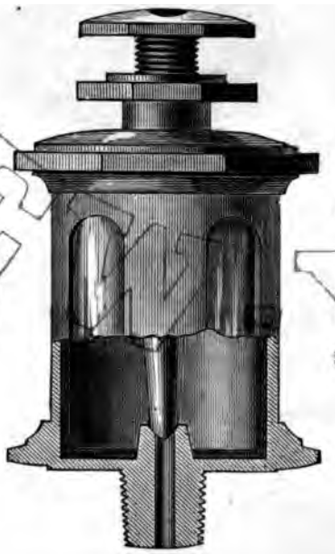


Fig. 500.

BROUGHTON'S TRANSPARENT GRADUATING OIL CUPS.

Fig. 501.

No.	Size, in.	Contents, oz.	Per doz.	Ex. Glasses, each.
0	¼	½	$15 00	$0 25
1	⅜	1	21 00	25
2	⅜	2	30 00	35
3	½	2¾	42 00	50
4	½	3½	54 00	75
5	¾	5	66 00	1 00

Solid Brass, per dozen..... $30 00 | Glass Reservoir, per doz.... $36 00

STEAM ENGINE SUPPLIES 50 & 52 JOHN ST. NEW YORK

BROUGHTON'S TRANSPARENT SHAFTING CUPS.

No.	Contents, oz.	Per doz.	Ex. Glasses, each
1	1	$10 00	$0 25
2	2	12 00	25
3	3½	15 00	35
4	10	24 00	50
5	15	36 00	75
6	36	48 00	1 00

Fig. 502.

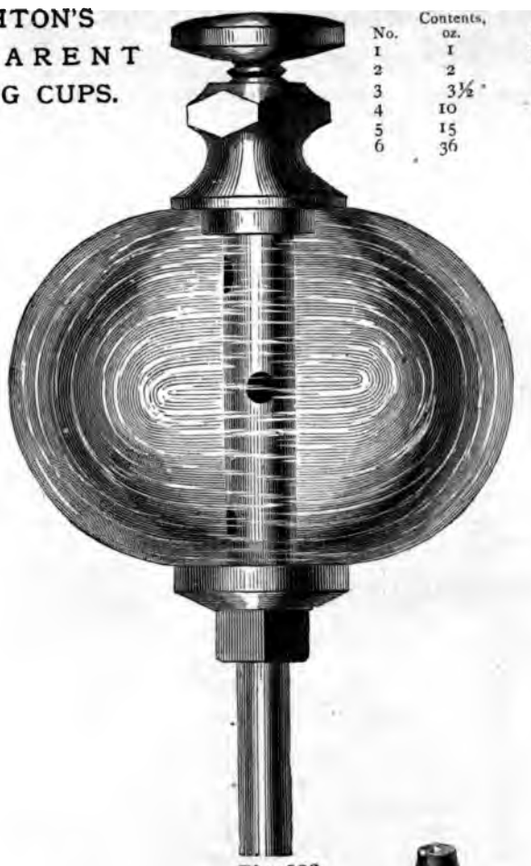


Fig. 503.

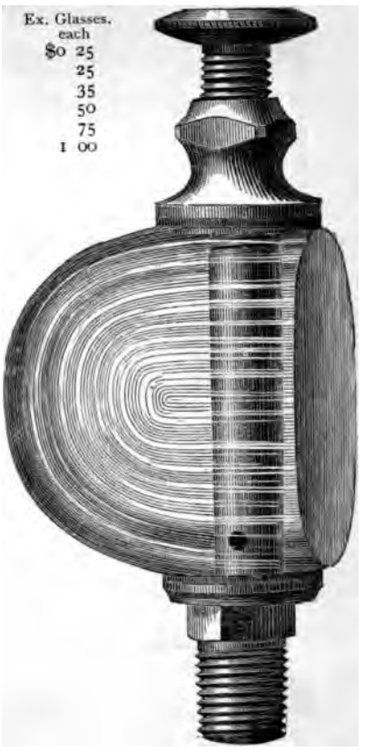


Fig. 504.

Fig. 505.—Glass Oil Cup, Fancy Gothic, Steam Metal Mounting.

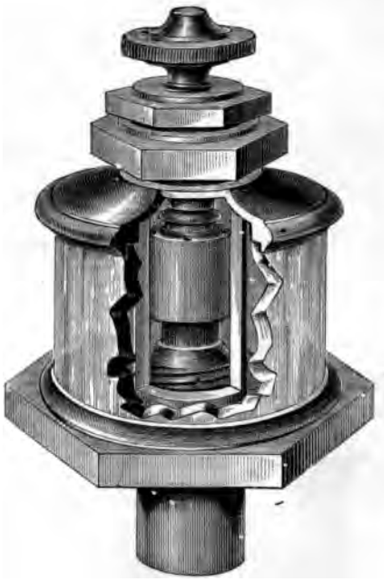


Fig. 506.—Glass Locomotive Rod Cup, with Valve, Steam Metal Mounting.

Fig. 507.—Glass Oil Cup, Plain, Steam Metal Mounting.

Fig. 508.—Glass Oil Cup, with Perforated Protecting Shield, Steam Metal Mounting.

STAR OIL CUPS.—Glass Cylinders, Steam Metal Mountings.

No.	0	1	1½	2	3	4	5
Diameter of Cylinder, inches	1	1½	1½	1½	1¾	2	2½
Size of Shank (Pipe Threads)	⅛	⅛	¼	⅜	½	½	½
Glass Oil Cups, Plain (Fig. 507) per doz.	$12 00	18 00	21 00	24 00	30 00	42 00	55 00
" " " with Protecting Shield (Fig. 508) "	15 00	21 00	25 00	30 00	36 00	48 00	63 00
" " " " Cocks "				42 00	48 00	60 00	90 00
" " " Square Base (similar to Base of Fig. 506) "	12 00	18 00	21 00	24 00	30 00	39 00	48 00
" " " " " with Protecting Shield "	15 00	22 00	27 00	30 00	36 00	48 00	63 00
" " " Fancy Gothic Pattern (Fig. 505) "	24 00	30 00	33 00	36 00	42 00	54 00	72 00
" " " for Connecting Rods, Automatic (Fig. 506) "		30 00	33 00	36 00	40 00		
" " " with Protecting Shield "		35 00	39 00	45 00	50 00		
" " " Globe Pat'n for Shafting, Large and Small ..... $8 00 "							
Extra Glass Cylinders, each, net	6	7	8	9	10	20	30

PLAIN OIL TANK.

Fig. 509.

Capacity. Gals.	Diam., in.	Height, in.	Plain.	Japanned.
15	14	28	$5 75	$6 25
20	15¼	28	6 25	7 00
30	18⅛	28	7 25	8 25
40	20½	28	7 75	8 75
50	18⅛	45	8 25	9 25
80	22½	45	10 00	12 00
100	22½	56	13 00	15 00

Lettering, extra..... $0 25
Brass Cocks, " 50

THE PERFECTION OIL TANK.

Fig. 510.

Securely packed for Shipping.

No.	Capacity.	Outside Meas'nt. Height.	Outside Meas'nt. Diameter.	Price.
0	6	16	13	$7 50
00	12	20	16	9 00
000	25	28	18	14 00
1	60	35	25	20 00
2	100	36	30½	30 00
3	150	41	36	38 00
4	200	43	40	45 00
5	250	43	44	50 00

EXTRAS. { Set of Measures (4) and Funnel..... $1 50
{ Brass Padlock, and Stop Cock for filling Oilers 1 25

NOYES' OIL SAVING CABINET TANKS.

Fig. 511.

150 Gals.....	$60 00	400 Gals.....	$90 00
270 "	70 00	500 "	110 00

Extra Heavy.

Fig. 512.

6 Gals.....	$10 00		
12 "	14 00		
50 "	35 00		
100 "	45 00		
100 " with 2 Compartments.....	55 00		
150 "	50 00		
150 " with 3 Compartments.....	75 00		
250 "	60 00		

An extra Tin Pump is furnished with the larger sizes of this tank.

AUTOMATIC OIL CABINET.

For Factory, Machine Shop, R.R., and Steamship Cabinets, with Tin Pump.

Cap'y, Gals.	Size, in.		Cap'y, Gals.	Size, in.	
10	15 × 18	$14 00	250	34 × 68	$60 00
50	27 × 27	35 00	100	27 × 42—with 2 Comp'ts	55 00
100	27 × 41	45 00	150	29 × 56— " 3 "	70 00
150	29 × 45	50 00	200	31 × 82— " 4 "	85 00
200	30 × 60	55 00	250	31 × 82— " 5 "	100 00

These Cabinets are constructed with Compartments, when required, so that several kinds of Oil can be kept in the same Cabinet. This is an immense convenience. Each compartment contains the Automatic Pump. Only $10 additional is charged for each compartment, as shown in the above list of prices. In ordering a Cabinet, please mention the kind of oil to be kept in it, as they differ somewhat in construction. For Kerosene the bottom is composed of lead.

Fig. 513.

Fig 514.

Each $9 25

OIL PUMPS FOR STEAM CHEST.

(Figs. 514, 515, and 516.)

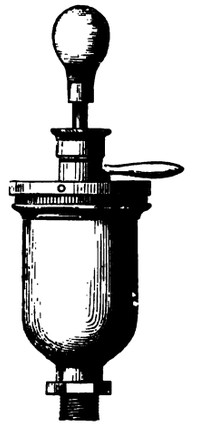


Fig. 515.

CORLIES' OIL PUMP.

FOR INJECTING OIL INTO CYLINDERS.

No. 1, Small, each..... .... $18 00
" 2, Large, " 25 00

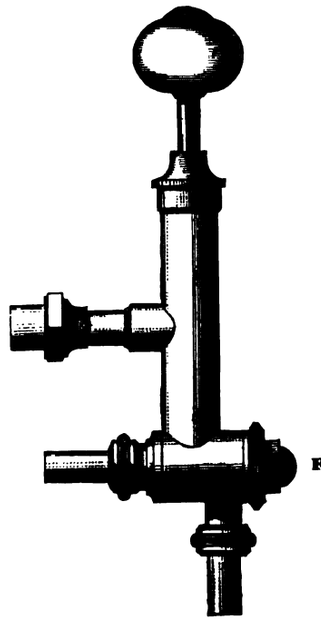


Fig. 516.

Each.... ..... $15 00

Fig. 517.

Holding, gals....	1	2	3	5	10
Each.....	$0 50	75	1 25	1 50	3 00

BRASS OR COPPER OIL FILLERS.

Fig. 519.

1 pt., Tin Bottom, per doz.....	$12 00
1½ " " "	14 00
2 " " "	16 00
Brass Bottoms, extra per doz.....	2 00
Long Tubes, " "	2 00

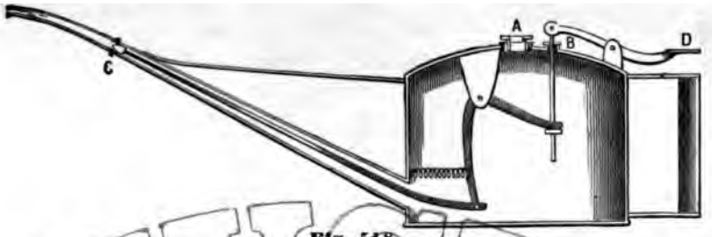


Fig. 518.

Tin, with Valve, 1 pt., $24; 1 qt., $36—Without Valve, 1 pt., $12; 1 qt., $24
Brass, " 1 " 36; 1 " 48— " " 1 " 24; 1 " 36

TALLOW CANS.

WITH BAIL AND HANDLE.

Fig. 520.

3 qts., Brass, per doz.....	$48 00
3 " Tin, "	36 00

Fig. 521.

Per Doz.	Without Valve. Brass.	Without Valve. Tin.	With Valve. Brass.	With Valve. Tin.
1 pt.,	$24 00	12 00	36 00	24 00
2 "	36 00	24 00	48 00	33 00
3 "	48 00	36 00	60 00	42 00

OILER SETS.

Fig. 522.

Fancy Cans and Fillers, with Drainers, 3 pieces...$12 00
Plating, extra..... 3 00

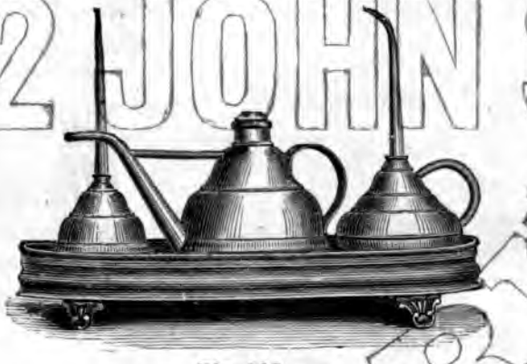


Fig. 523.

Oblong, Round Corners.....$12 00
" Square " 12 00

Fig. 524.

Fancy Cans and Fillers, with Drainers, 5 pieces, $16. Plating, extra, $4.

TIN OIL FEEDERS.

Fig. 525.

Qt.	Plain Top. Per Doz.	With Screw Top.
1...	$5 60	$6 00
2...	9 00	10 50

Fig. 526.—WITHOUT DRIP PAN.

Brass.....$7 00 | Nickel-plated.....$10 00

SCOVILL MFG. CO. SUPPLIES 50 & 52 JOHN ST. NEW-YORK

BROUGHTON'S OILERS.

Fig. 527.—Improved Shape.

Fig. 528.—Seamless Bottom.

Fig. 529.—Railroad.

Fig. 530.—Double Bottom.

ZINC TOPS AND BRASS BOTTOMS.

PER DOZEN.

Nos.	1	2	3	4	5
Double Bottom	$3 00	4 50	6 00		
Seamless "	3 00	4 00	5 00		
Extra "	2 00	3 00	4 00	5 50	7 00
Railroad	5 00	7 50			
Engineers'	9 00				

	2½	3	3½	4	6	9	12
Tin	$0 50	60	75	90	1 25	2 50	3 00
Brass	75	90	1 25	1 50	2 75	3 75	4 50

Tubes of any length to order.

ALL BRASS.

	1	2	3	4	5
	$5 90	7 00	9 00		
	4 00	5 00	6 00		
	3 00	4 00	5 00	6 50	8 00
	7 50	10 00			
	12 00				

EXTRA TUBES.

	3	3½	4	6	9	12
	60	75	90	1 25	2 50	3 00
	90	1 25	1 50	2 75	3 75	4 50

SCRIPTURE'S FUNNEL TOP OILERS.

No.	Per doz.
3—Brass.	$3 50
4— "	4 25
5— "	5 16
3—Zinc	2 00
4— "	2 42
5— "	2 92
	Per Gro.
3—Tin	27 00
4— "	28 00

SPUN PATTERN.

Fig. 531.

Fig. 532.

BONNELL'S PATENT BAR OILERS.

(Fig. 533.)

No.	Stamped Tin.	Spun Brass.	Spun Zinc.	
0—	$11 00		$11 00	per gro.
1—	14 00	$30 00	14 00	"
2—	18 00	33 00	18 00	"
3—	21 00	39 00	21 00	"
4—		45 00	24 00	"

Oval Oilers, in boxes of ½ doz. each, per gross..... $

Mowing Machine Oilers, body of seamless Tin, per gross.. 20 00

Fig. 533.—One Pint.

EXTRA MACHINE OILER.

Fig. 533 is a large, oval-shaped Oiler, made expressly for agricultural and other machinery that requires a large Oiler. It is made with a patent bar. For the merchants' trade, if desired, they are put up in neat paper boxes, half dozen each.

Per 100, in bbls. of about 125..... ... $15 00

COMMON OILERS.

PER GROSS.

No.	Zinc.	Brass.	New Pattern Zinc.	New Pattern Brass.
1	$12 00	$18 00	$16 00	$28 00
2	18 00	24 00	20 00	33 00
3	21 00	36 00	23 00	40 00
4	24 00	45 00	27 00	48 00
5	33 00	60 00	36 00	65 00
6	40 00	70 00	43 00	80 00

Tin..... Small, $7 75—Medium, $15 00
—Large, $18 00

10 per cent added for Brass Bottoms on Tin or Zinc Oilers.

RUBBER OILERS.

PER DOZEN.

No. 0, Small.....	$3 25
" 1, Large, with Tin Tube.... ...	4 00
" 2, " " Brass "	5 00

Fig. 534.

PRIOR'S PATENT OILERS.

(Fig. 534.)

No.	Per Gross. Zinc, with Spun Tin Bottoms.	Zinc, with Spun Brass Bottoms.	All Brass.
0	$20 00		$33 00
1	24 00	$27 00	40 00
2	28 00	30 00	48 00
3	33 00	36 00	56 00
4	36 00	40 00	64 00
5	40 00	45 00	80 00
6	48 00	53 00	96 00

PATENT MALLEABLE IRON OILERS.

WITH PATENT ELLIPTIC STEEL SPRING.

Fig. 535.

Per dozen..... $6 00

LAMPS AND LANTERNS.

MALLEABLE IRON LAMPS.

Fig. 536.

Per dozen..... $6 00

BRASS HAND LAMPS.

Fig. 537.

Nos.....	0	1	2	3	4
Per dozen.	$1 30	1 40	1 60	2 00	2 50

GALVANIZED IRON LAMPS.

Fig. 538.

Per dozen..... $3 00

TIN OR IRON LAMPS.

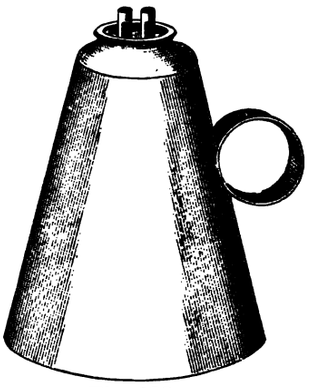


Fig. 539.

Per dozen..... $3 00

BUNKER LAMPS.

(Figs. 540 and 541.)

Per doz., either style, $3 00

Fig. 540.

Fig. 541.

Fig. 542.

Fig. 543.

JACKET LAMPS.

(Fig. 543.)

Raised Bowl, 2 Tube and Feeder Jacket Lamps, per gross.....	$15 00
Straight Bowl, 2 Tube and Feeder Jacket Lamps, per gross.....	15 00
Extra, 2 or 3 Tube and Feeder Jacket Lamps, per gross.....	30 00

Fig. 544.

TIN LAMP BURNERS.

(Fig. 544.)

Per dozen.....	$0 30
" Flat.....	60

Fig. 545.

LOCOMOTIVE TORCHES.

Tin, per dozen....	$13 00
Brass, "	18 00

MALLEABLE IRON OIL FOUNT.

(Fig. 545.)

Without Burner or Chimney, per doz.....	$8 50
Burners for same, per doz..	2 25
Chimneys " "	80

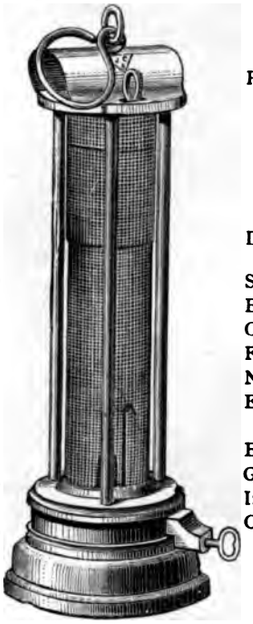


Fig. 546.—Newcastle (Improved Lock).

MINERS' LAMPS.

(Figs. 546 and 547.)

DAVY MINERS' SAFETY LAMP.—Best English Make.

Stephenson's.....	each,	$7 00
Best Clanney.....	"	6 25
Common "	"	5 50
Fireman's Lamp.....	"	4 00
Newcastle, Improved Lock.....	"	4 00
Extra Gauzes for Clanney.....	per doz.	6 00
" " " other lamps.....	"	6 50
Best Quality Gauze.....	per yard,	1 50
Glasses.....	per doz.	6 00
Improved Metallic Brush.....	"	8 00
Ordinary Hair Brush, for outside.....	"	5 50

Fig. 547.—Clanney Lamp.

MINERS' CAP LAMPS—TIN.

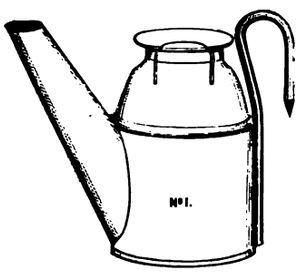


Fig. 548.

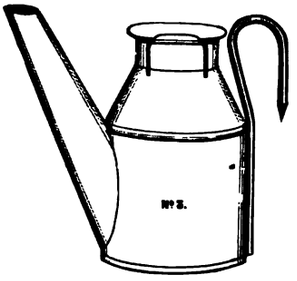


Fig. 549.

Fig. 550.

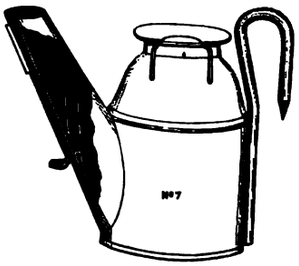


Fig. 551.

Nos.....	1	2	3	4	5	6	7	8
Per Gross.....	$15 00	15 00	18 00	18 00	12 00	12 00	30 00	30 00

Nos. 1, 3, 5, and 7, Small Spouts, for Miners. Nos. 2, 4, 6, and 8, Large Spouts, for Drivers.

HAND LANTERNS.

Fig. 552.
No. 1 Extra, Conductors'.

Fig. 553. PET CONDUCTOR.

(Fig. 552.)

White Globe, per doz.	$60 00
Half Green Globe, per doz.	75 00
" " " Large, per doz.	80 00
White Globe, " "	65 00

(Fig. 553.)

White Globe, per doz.	$55 00
Half Green Globe, per doz.	73 00

Fig. 554.
No. 1 Extra, 1 Guard.

Fig. 555.
No. 2 Extra, 2 Guards.

Fig. 556.—PEERLESS.
Radiates Light through Base.

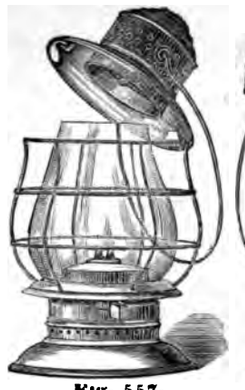


Fig. 557.
TIN.

Fig. 558.
No. 2, RAILROAD LANTERN.

(Fig. 554.)

Extra R. R., Tin, 1 guard, hinge top and bottom	$13 50

(Fig. 555.)

Extra R. R., Tin, 2 guards, hinge top and bottom	$13 50

(Fig. 556.)

All Brass, per doz.	$26 00
Brass Base "	13 75
Brass Top, rest Tin, per doz.	10 50

(Fig. 557.)

White Globe, per doz.	$10 00
Ruby " "	18 75
Green " "	15 31
Blue " "	15 31

(Fig. 558.)

All of our Hand Frames are fastened at the top with guard passing over the top rim without solder, which makes it much better than the tin clip.

White Globe, per doz.	$11 00
Ruby " "	20 00
Green " "	17 18
Blue " "	17 18

Fig. 559.—LAKE AND RIVER LANTERN.
Extra large Oil Cup and Removable Globe.

Fig. 560.
No. 6, Square R. R. Lantern.

Fig. 561.—With Reflector
Square R. R. Signal Light.

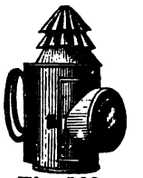


Fig. 562.
POLICE OR DARK LANTERN.

Fig. 563.—CATHEAD FRESNEL—Port and Starboard.

Fig. 564.
MAST-HEAD FRESNEL.
Brass Trimmings.

(Fig. 559.)

White Globe, per doz.	$12 00
Ruby " "	20 13
Green " "	17 62

(Fig. 560.)

White Glass, per doz.	$18 00
Colored " "	26 00

(Fig. 561.)

White Glass, each	$5 00

(Fig. 562.)

No. 1, per doz.	$10 00
" 2, "	12 00
" 3, "	15 00

(Fig. 563.)

Painted, per pair	$15 00
Brass, "	25 00

(Fig. 564.)

White Globe, each	$8 00
Red and Green Globe, each	10 00

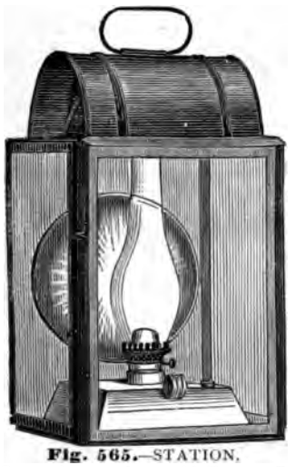


Fig. 565.—STATION.

Square, bow top, 8 x 11, with Kerosene Burner, Chimney and Reflector, per doz. $34 00
Square, bow top, 9 x 13, with Kerosene Burner, Chimney and Reflector, per doz. 40 00
Larger sizes to order.

Fig. 566.
TRIANGULAR.
Per doz. $16 50

Fig. 567.—SALOON.

Square, Hand, small size, per doz. $6 00
Square, 7 x 9, with Kerosene Burner, Chimney and Reflector, per doz. 22 00

Fig. 568.
Brass, with Silver Plated Reflector $7 50

REAR OR TAIL LAMP.

Fig. 569.

Tin, Japanned, 8 inch Bull's-Eye (Ruby), per doz..... $180 00

DOUBLE LENSE TAIL LAMP FOR CABOOSE.

Fig. 570.

Each..... $17 00

SWITCH TARGET LAMP.

Fig. 571.

Each..... $6 00

PATENT REVOLVING HEAD LIGHT.

Fig. 572.

Fig. 573.

No. 1. 23 inch Reflector, with all our improvements, complete..... $75 00
" 2. 23 " " made of lighter material, and without Pat. Attachments. 60 00
" 3. "Pony," 17 inch Reflector for "Narrow Gauge"..... 60 00
" 4. Mill, 17 inch Shallow Reflector..... 45 00
" 5. 17 inch Reflector, Narrow Gauge, all improvements..... 65 00

GLASS GLOBES FOR LANTERNS.

White, per dozen..... $3 00
Blue or Green, per doz..... 8 00
Ruby " 10 00

LOCOMOTIVE HEAD LIGHT CHIMNEYS.

To order, per doz..... $3 00 to $4 00

COTTON WICK.

In packages of 10 lbs., per lb..... $0 35

WICKS FOR HEAD LIGHTS.

Per gross..... $
Patent Felt Wick, per gross..... 30 00

LOCOMOTIVE HEAD LIGHTS.

ORDINARY PATTERNS.

16 inch Reflector, each..... $50 00
18 " " " 55 00
20 " " " 60 00
23 " " " 75 00

We make these Head Lights either for Oil, Gas, or Kerosene.

BURNERS FOR HEAD LIGHTS.

Each..... $10 00 and $12 00

LOCOMOTIVE, CAB, OR STEAM GAUGE LAMPS.

PER DOZEN.

Fig. 575. Brass, with 2 bull's-eyes, with rods or screw..... $56 00
" 575. " " 1 " " " " 35 00
Tin, with 2 bull's-eyes..... 34 00
" " 1 " 23 00
Fig. 576, Brass..... 43 50
" 576, Tin..... 28 50
" 574, Painted Globe..... 72 00
" 577, Brass, wood..... 75 00

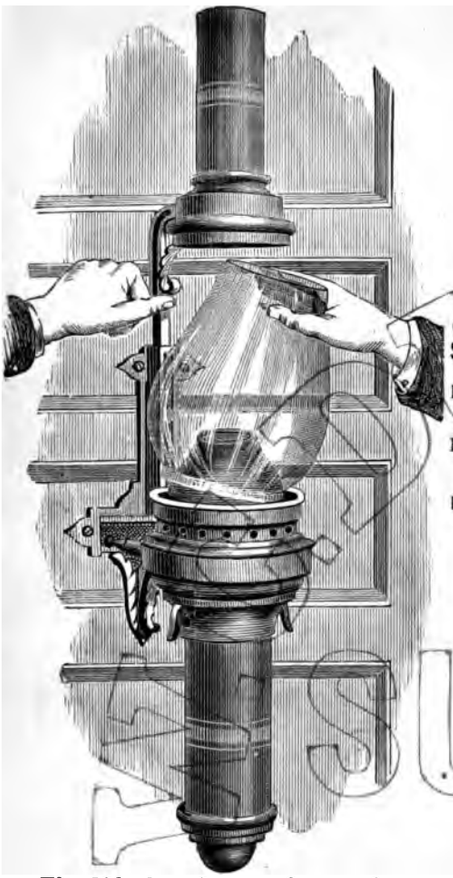
Fig. 574.

Fig. 575.

Fig. 576.

Fig. 577.

SUPPLIED BY JOHN ST. NEW-YORK



SIDE CAR LAMP.

Bronze and Gilt, for Candle..... $7 50
Bronze and Gilt, for M. S. Oil..... 9 00
Plated, for M. S Oil, 12 50
" " Candle... 10 50

Fig. 578.—Loose Globe, for Candle or Oil.

CENTRE LAMP.

Fig. 579.

For Narrow Gauge and Street Cars.

Finished in Bronze and Gilt, $14 00 | Fin. in Silver or Nickel Plate.. $18 00

LOOSE GLOBE CAR LAMP.

Fig. 581.—For Candle Only.

In ordering, state length of arm required.
Bronze and Gilt..... $25 00 | Silver or Nickel $20 00

BRACKET LAMP.

USING CHIMNEY.

The chimney, as here shown, is firmly held in place, avoiding all danger of breakage. The oil pot is the same as in Centre Lamp No. 583. Very strong and durable; suitable for cars, steamboats, offices, stations, etc., etc. *The oil can not drip.*

Finished in Gilt and Bronze, per doz.... $42 00
Finished in Bronze, with Plated Reflector, per doz..... 48 00
Finished in Silver or Nickel Plate, per doz..... 54 00

Fig. 580.—Burns Mineral Sperm or Kerosene Oil.

BUYCOTT & SUPPLIE
50 & 52 JOHN ST
NEW YORK

CENTRE CAR LAMP,

WITH DEFLECTOR.

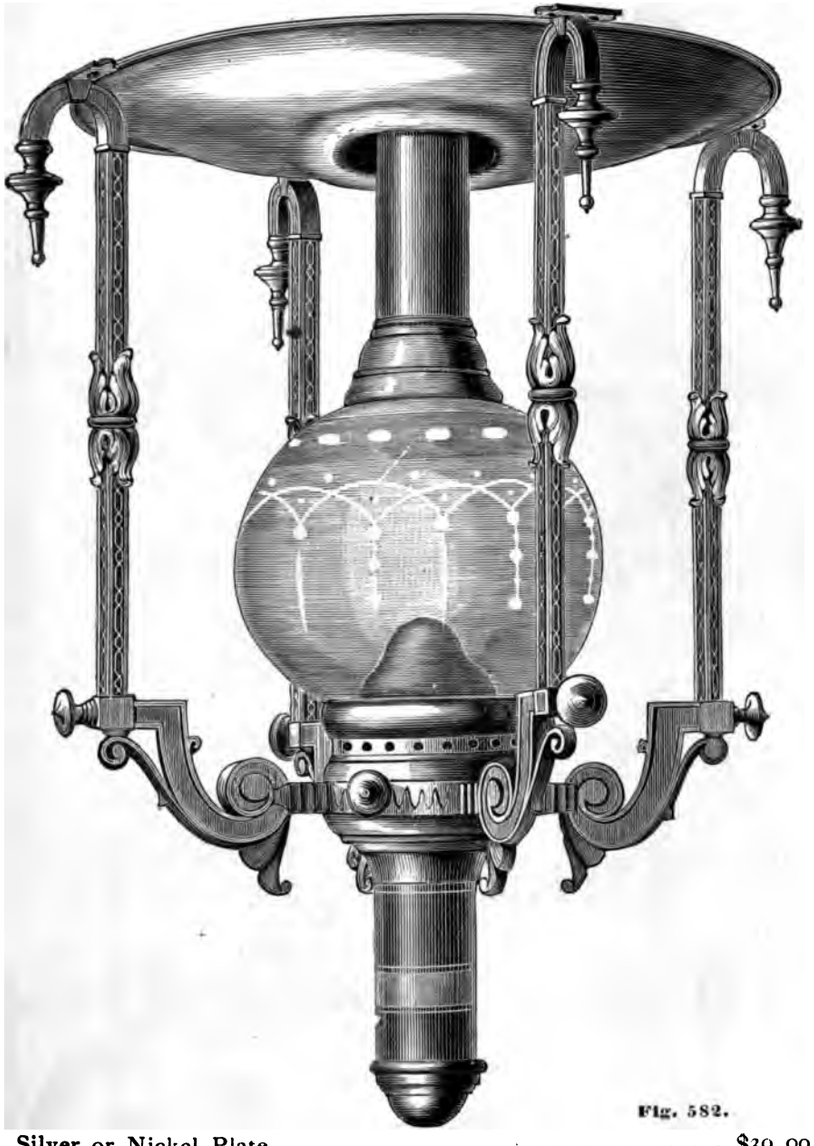


Fig. 582.

Silver or Nickel Plate..... $30 00
Any style of Bronze or Gilt..... 28 00
Loose Globe or Cemented Globe at same prices.

Candle Sockets are made unusually strong. The whole can be readily taken apart for cleaning, etc. The Spiral can be stiffened so as to burn up the entire candle. Each, $3.50.

The Mineral Sperm Oil Pot is made very strong. The flame is regulated by means of an outside ratchet. Each, $5.50.

CENTRE CAR LAMP,

USING CHIMNEY.

Fig. 583.

BURNS EITHER MINERAL SPERM OR KEROSENE OIL.

Be particular to order arms *as long as possible* without interfering with bell cord. We make this lamp of suitable sizes for narrow gauge cars and for street cars.

Bronze and Gilt..... $20 00 | Plated..... $25 00

We send *plated* reflectors, unless *porcelain* are preferred.

Fig. 584.

LOOSE GLOBE CAR LAMP.

(Fig. 584.)

BURNS CANDLE OR MINERAL SPERM OIL.

This is a strong, handsome Lamp, Loose Globe, heavy patent fastenings. In ordering, state length of arm desired.

Bronze and Gilt, for Candle..... $20 00
" " " " Mineral Sperm Oil..... 22 00
Silver or Nickel Plate, for Candle..... 24 00
" " " " Mineral Sperm Oil..... 26 00

SIDE CAR LAMP.

(Fig. 585.)

GLOBE AND CHIMNEY FOR MINERAL SPERM OIL.

Bronze or Gilt..... $12 00 | Plated..... $15 00

We make a Bracket Lamp similar in style to above, only much smaller, taking the ordinary Lantern Globe, and burning lard oil.

In Bronze..... $5 00 | Plated $7 00

CENTRE CAR LAMP.

(Fig. 586.)

REQUIRING GLOBE AND CHIMNEY. MINERAL SPERM OIL.

If desired, we make Loose Globe Car Lamps for Candles, with the above Trimmings.

Mineral Sperm Oil, Bronze, $28 00 | Mineral Sperm Oil, Plated, $32 00

Give length of arms required.

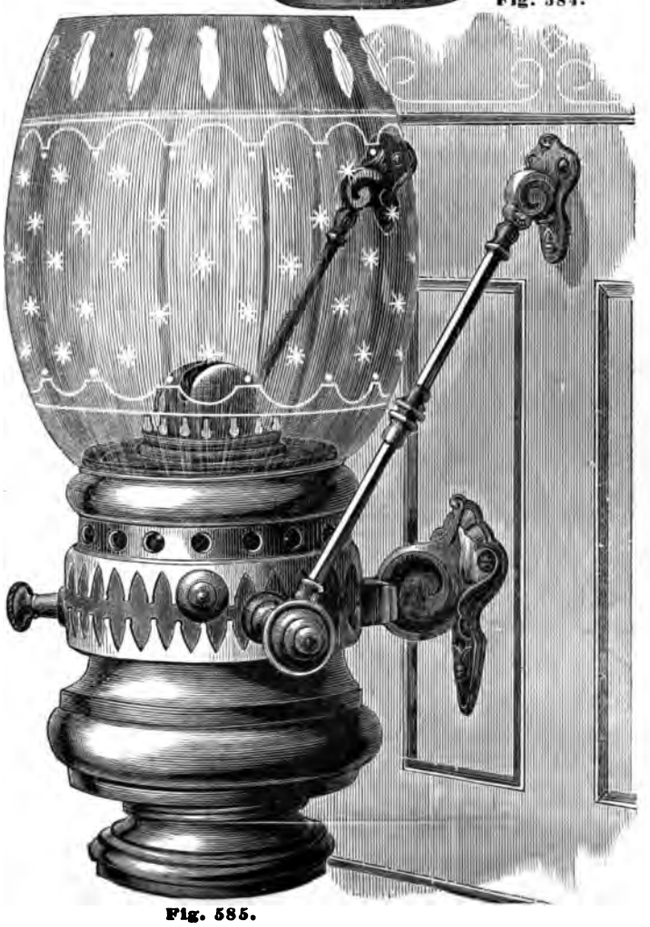


Fig. 585.

Fig. 586.

Fig. 587.—Arranged for Oil.

Square, per doz.....$55 00
With Frame for Post, per doz..... 90 00

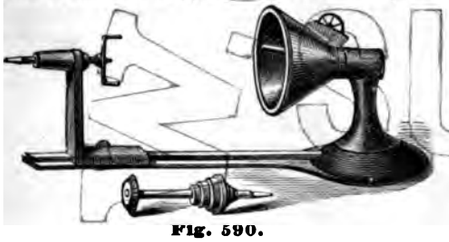


Fig. 590.

Fig. 588.

No. 1. With Movable Globe, Patent Cushion Screws, and 25 in. Reflector, each.....$35 00

NUTT'S PATENT VALVE REFITTING MACHINE.

(Fig. 590.)

This machine is for repairing leaky stop valves, and is the only machine that will repair *all kinds* of stop valves.

It repairs them without detaching the valves from the connecting pipes.

It makes old valves as good as new quicker and safer than with emery.

No.	1.	Machine for repairing all sizes of Valves up to	1¼	inch.,			$25 00
"	2.	"	"	"	"	1½	" 35 00
"	3.	"	"	"	"	2	" 50 00
"	4.	"	"	"	"	2½	" 60 00
"	5.	"	"	"	"	3	" 75 00
"	6.	"	"	"	"	3½	" 85 00
"	7.	"	"	"	"	4	" 100 00
"	8.	"	"	"	"	4½	" 120 00
"	9.	"	"	"	"	5	" 130 00
"	10.	"	"	"	"	5½	" 140 00
"	11.	"	"	"	"	6	" 150 00

Fig. 589.

HALL'S PATENT MACHINE FOR REFITTING VALVES.

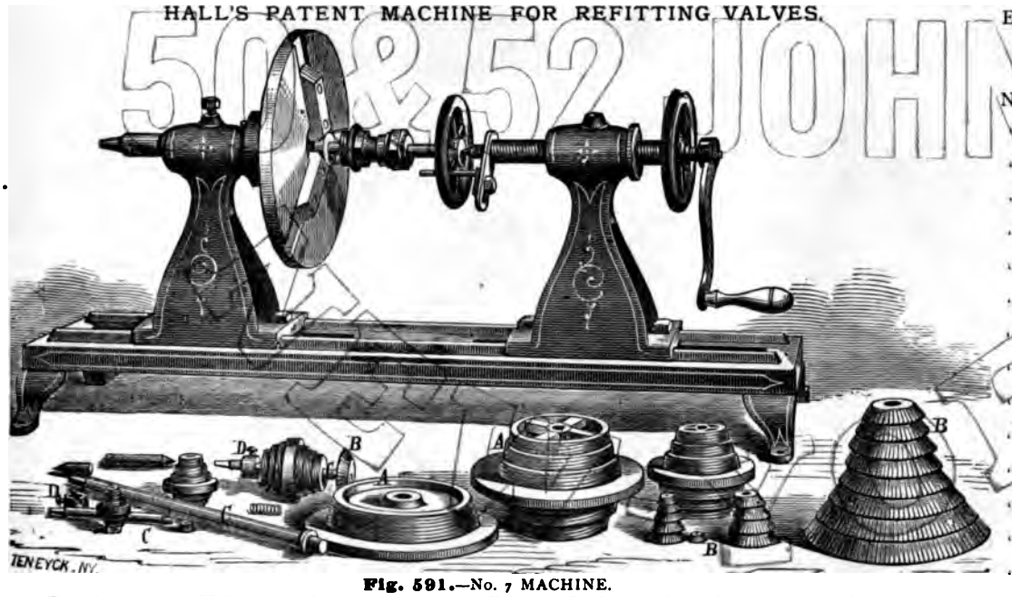


Fig. 591.—No. 7 MACHINE.

By this machine, Valves can be repaired on the Pipes or Boilers without disconnecting, thereby saving time, labor, and money.

This machine is simple in construction and action, portable, is worked by hand, and being durable, will not require repairing.

Valves can be more accurately repaired with it than with the Lathe or Emery.

No.	1.	7	Cutters,	repairing	from	⅛	to 1	inch Valves.....$50 00
"	2.	12	"	"	"	⅛	to 2	" " 75 00
"	3.	14	"	"	"	⅛	to 2½	" " 100 00
"	4.	15	"	"	"	⅛	to 3	" " 130 00
"	5.	16	"	"	"	⅛	to 4	" " 150 00
"	6.	18	"	"	"	⅛	to 5	" " 175 00
"	7.	20	"	"	"	⅛	to 6	" " 200 00

Each.....$6 50

Complete for Oil—Style Fig. 589.

No.	1a.	Post Lamp	$8 50
"	2a.	" "	8 50
"	3a.	" "	10 50
"	4a.	" "	10 00
"	5a.	" "	10 00
"	6a.	" "	12 00
"	21a.	" "	10 50
"	22a.	" "	10 50
"	23a.	" "	12 50
"	24a.	" "	12 00
"	25a.	" "	12 00
"	26a.	" "	14 00
"	31a.	Hanging Lamp	10 00
"	32a.	" "	12 00
"	37a.	" "	12 00
"	38a.	" "	14 00
"	11a.	Bracket Lamp	8 50
"	12a.	" "	8 50
"	13a.	" "	10 50
"	17a.	" " with name glasses,	11 00
"	18a.	" " " "	13 00

Extra Globes, each, net..... 1 00

50 & 52 JOHN ST. NEW YORK

IMPROVED MACHINES FOR SCREWING AND CUTTING STEAM AND GAS PIPES,

BY HAND OR POWER.

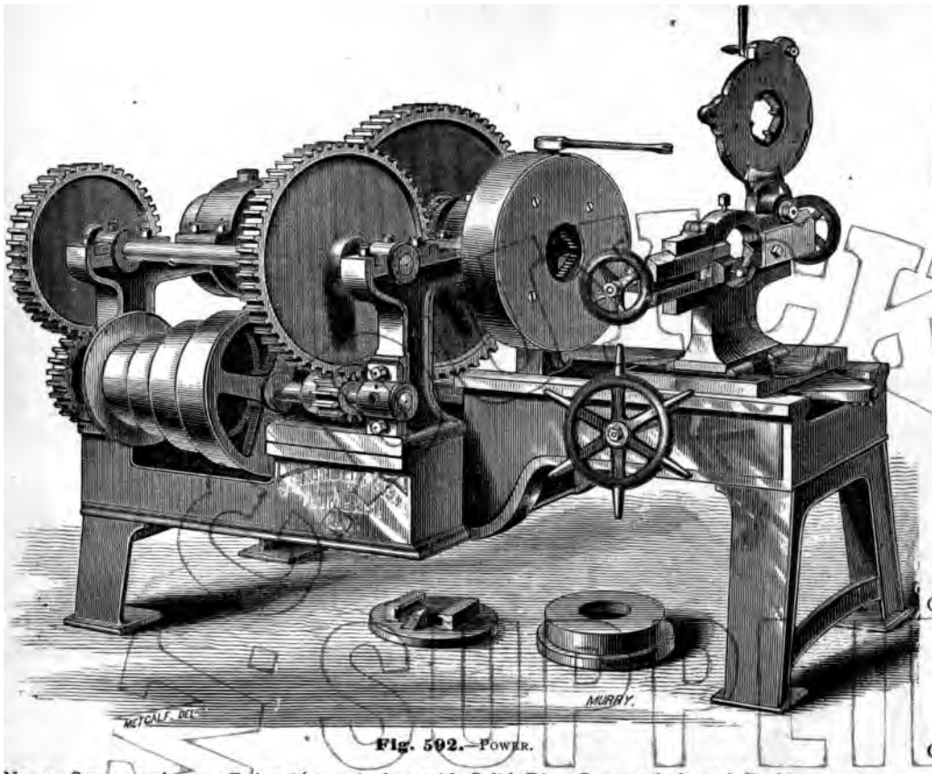


Fig. 592.—Power.

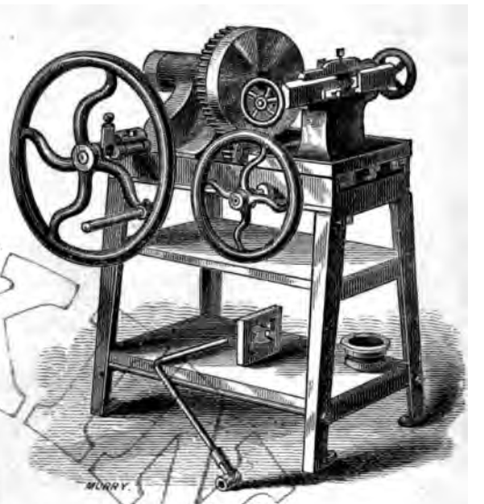


Fig. 593.

No. 2—Screws and cuts off pipe ¼ to 2 inches, with Solid Dies, Countershaft, and Bushings complete..... $350 00

" 3—Screws and cuts off pipe ¼ to 3 inches, with Cutter Dies 2½ and 3 inches, solid ¼ to 2 inches, Countershaft and Bushings, complete..... 500 00

" 4—Screws and cuts off pipe 1 to 4 inches, with Cutter Dies 2½ to 4 inches, solid 1 to 2 inches, Countershaft and Bushings, complete..... 590 00

" 5—Screws and cuts off pipe 1¼ to 6 inches, with Cutter Dies 2½ to 6 inches, solid 1¼ to 2 inches, Countershaft, complete..... 1000 00

" 6—Screws and cuts off pipe 2½ to 8 inches, with Cutter Dies, Countershaft complete.... 30 00

When these machines (Nos. 2, 3, and 4) are made to work by hand as well as power, extra cost,

We also manufacture our Patent Dies, which open so that the Die may be taken off the pipe without stopping or reversing the machine.

HAND MACHINE.

Cutting and screwing pipe from ⅛ inch to 2 inches in diameter, with Universal Chuck, Fly Wheel, and Dies, complete..... $175 00

POWER MACHINE.

Cutting and screwing pipe from ⅛ inch to 2 inches in diameter, with Universal Chuck, Cone Pulleys, Countershaft, and Dies, complete..... 210 00

CAMDEN MACHINE.

No.				
2—	Hand Machine,	⅛ to 2	in. pipe, complete,	$175 00
2—	Power "	⅛ to 2	" "	200 00
4—	" "	¼ to 3	" "	575 00
5—	" "	¼ to 4	" "	600 00
6—	" "	1 to 6	" "	1000 00
8—	" "	2½ to 8	" "	1350 00

MORRIS, TASKER & CO.'S MACHINE.

HAND SCREWING MACHINE, No. 1.

For ¼ to 1¼ inch Tube, with Universal Chuck and Cutting-off and Screwing Head, Solid Dies..... $85 00

HAND SCREWING MACHINE, No. 2.

For ¼ to 2 inch Tubes, with Fly Wheel, Universal Chuck and Cutting-off and Screwing Head, Solid Dies..... 219 00

POWER SCREWING MACHINE, No. 2.

For ¼ to 2 inch Tubes, with Cone Pulleys and Countershaft, Universal Chuck and Cutting-off and Screwing Head, Solid Dies..... 232 00

POWER SCREWING MACHINE, No. 3. IMPROVED.

For ⅜ to 4 inch Tubes, with Countershaft, Universal Chuck, and Cutting-off and Screwing Head. Made to use Solid Dies, ⅜ to 2 inch, and Cutter Dies, 2½ to 4 inch, complete..... 592 00

HAND SCREWING MACHINE, No. 3.

For ⅜ to 4 inch Tubes, with Universal Chuck, and Cutting-off and Screwing Head. Made to use Solid Dies, ⅜ to 2 inch, and Cutter Dies 2½ to 4 inch..... 538 00

SCREWING MACHINE, No. 4.

For 1 to 6 inch tube, with Countershaft, Universal Gripping Chuck, Universal Steady Rest in Cutting Head, Universal Rest for back of Spindle, Gates for carrying Screwing Dies, etc., etc. Made to use Solid Dies, 1 to 2 inch, and Cutter Dies, 2½ to 6 inch, complete..... 1214 00

NEW YORK

CHASE'S PIPE MACHINE.

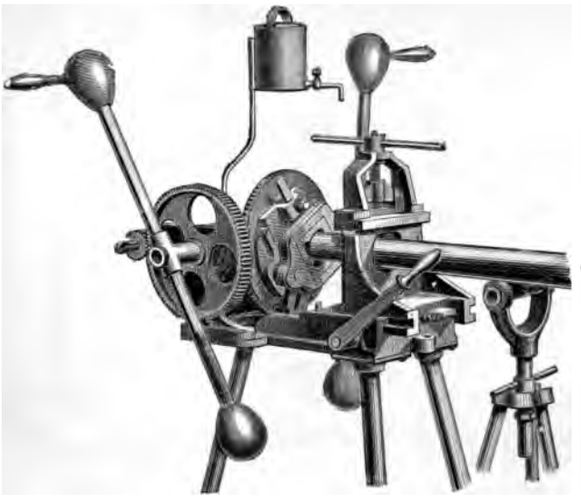


Fig. 594.

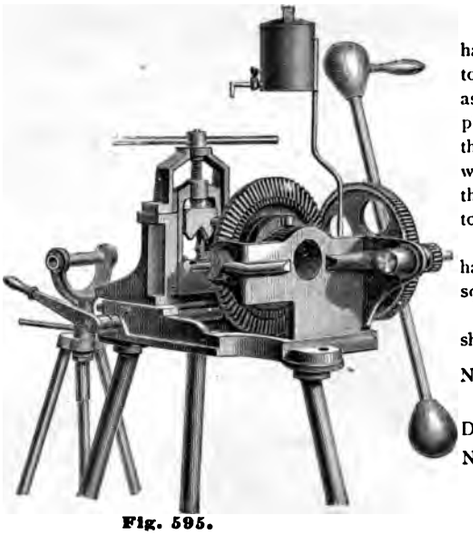


Fig. 595.

Fig. 594 shows the machine as fitted for hand power, motion being transmitted to the several parts by means of gearing, as shown ; while on the right is seen the pipe rest and pipe, held stationary by the adjustable jaws of the pipe vise, which passes through the centre of gear, the rotary motion of which is imparted to the die held in the die box.

When cutting pipe, the cutting-off tool has automatic feed, cutting ends of pipe square and smooth.

Fig. 595 shows the reverse of the side shown in Fig. 594.

No. 1. Including a full set of collars for making Nipples.. $140 00

Dies, from ⅛ to 2 inches, extra, 20 00

No. 2. Including Countershaft and Dies..... $600 00

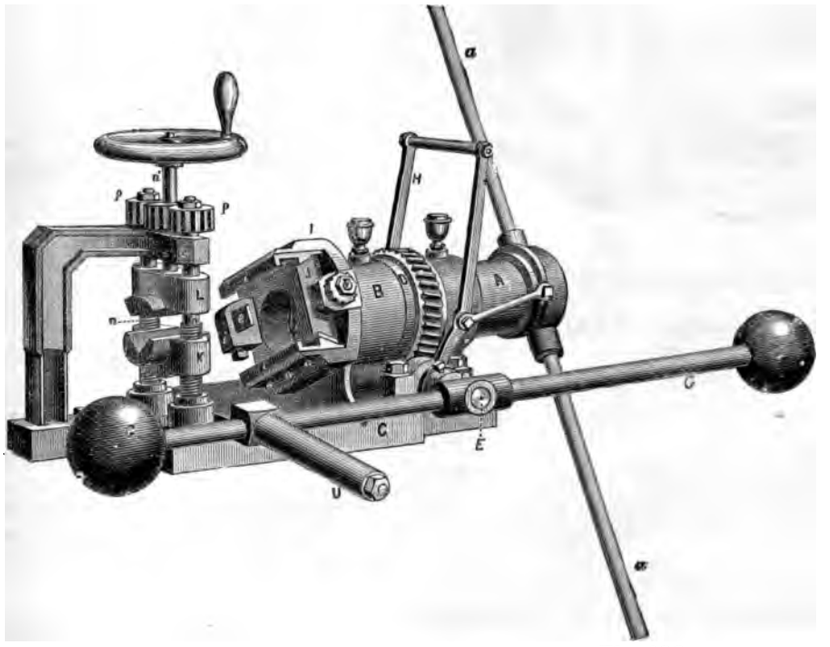


Fig. 596.

EMPIRE PIPE AND BOLT THREADER, PIPE AND BAR CUTTER, AND NUT TAPPING MACHINE.

Hand Machine, No.	1	.....	$80 00
" " "	1, with Dies ⅛ to 2 ins., right hand,		95 00
Power " "	1	.....	110 00
" " "	1, with Dies ⅛ to 2 ins., right hand,		130 00
Hand " "	2	.....	150 00
" " "	2, with Dies ¼ to 3 ins., right hand,		185 00
Power " "	2	.....	165 00
" " "	2, with Dies ¼ to 3 ins., right hand,		200 00

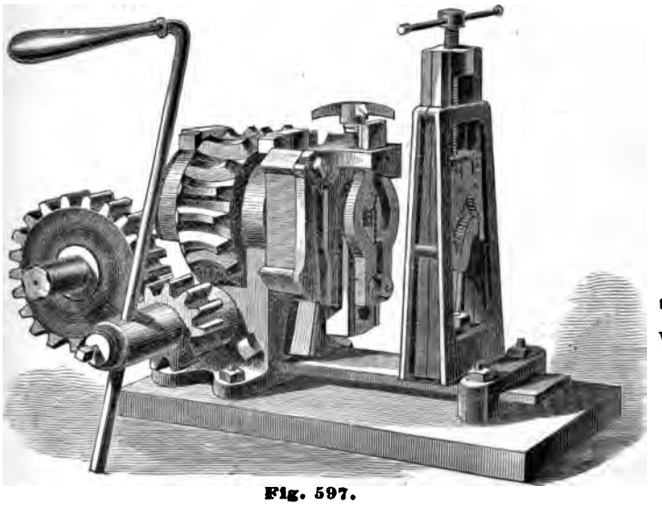


Fig. 597.

SANFORD'S SCREW GEAR PIPE AND THREAD CUTTER.

This machine is for cutting off and threading Pipe ¼ to 2 in.

Without Dies..... $50 00

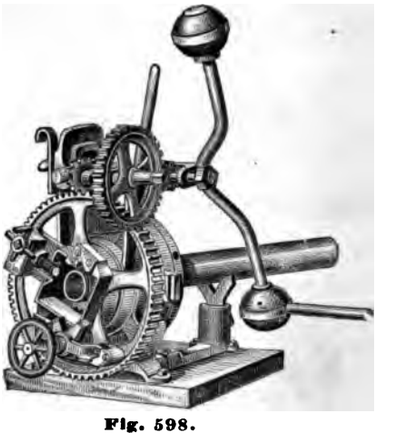


Fig. 598.

ROBERTS' PATENT MACHINE AND VISE.

No. 1, threading ⅛ to 2 in..... $55 00

" 2, " and cutting ⅛ to 2 in. 75 00

Full set of Dies, extra..... 20 00

SAUNDER'S PATENT PIPE AND TUBE CUTTER.

FOR CUTTING IRON, BRASS, OR COPPER TUBES.

Tube is encircled by Friction Rollers, and all wearing surfaces are made of hardened steel.

Fig. 599.

No. 1—⅛ to 1 in. inclusive..	$6 50
" 2—1 to 2 " ..	8 00
" 3—2 to 3 " ..	16 00
" 1 Tool........	18
" 2 "	25
" 3 "	35

Fig. 600.

SANFORD'S PATENT RATCHET PIPE CUTTER AND THREADER.

With this machine one person can cut off a Pipe 1¼ to 2 inches, or cut a screw on the same, in half the time that two men usually take with the common stock and die.

With the Ratchet and Lever it can be used in many places where the ordinary cutter can not. The Lever can be lengthened, as power may be required, it being in two lengths. The cut-off attachment is self-acting, and can be removed when the dies are used. It has a leading screw to force the die on the pipe. It is adapted to all work, is portable, lighter, less expensive than any thing of the same capacity, and is the most desirable article of the kind in the market.

With Cut-off, to cut from 1¼ to 2 inches, without Dies............ $25 00

The usual Square Dies are used for this size.

With Dies and Cut-off, for 2½, 3, 3½, and 4 inch pipe............ 70 00

Fig. 601.

THE ACME PIPE CUTTER—CAST STEEL.

No. 1—Cuts ⅛ to 1 inch, each........	$7 50	Extra Knives....	$0 30
" 2— " ¾ to 2 " "	9 00	" "	50
" 3— " 2½ to 3 " "	18 00	" "	1 00

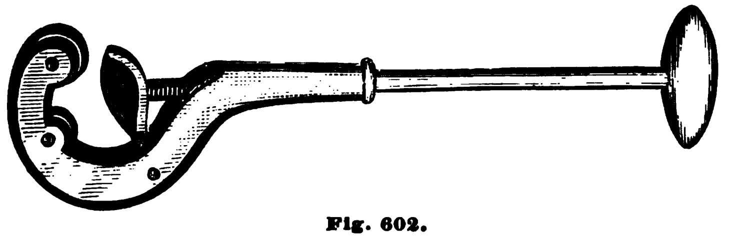


Fig. 602.

FOSTER PIPE CUTTERS.

No..................	1	2	3
Cuts Pipe, inch..........	¼ to ¾	¾ to 1½	1 to 2
Each..................	$8 00	10 00	12 00
Extra Cutters..........	62	75	1 00

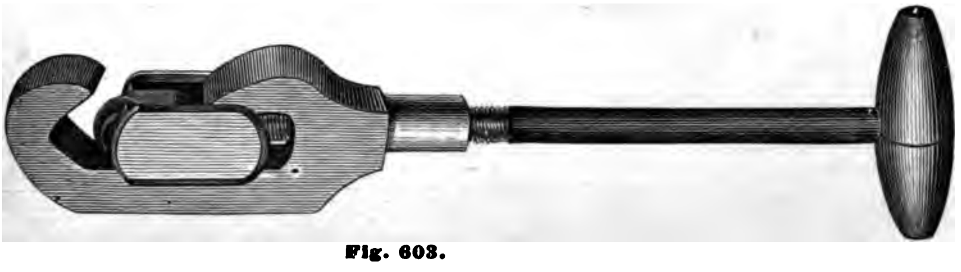


Fig. 603.

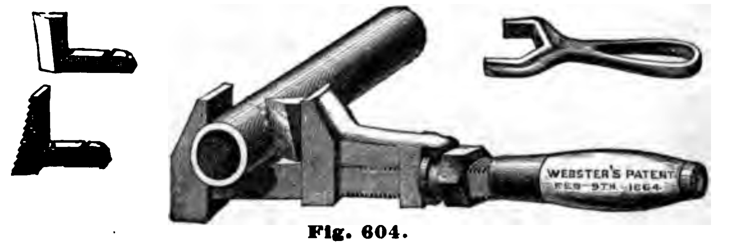


Fig. 604.

WEBSTER'S PATENT ORDINARY WRENCH.

	Per Doz.
12 inch Wrench, to cut off and screw up pipe ⅛ to ¾ in. diameter,	$48 00
15 " " " " " " " ⅛ to 1½ "	60 00
18 " " " " " " " ⅛ to 2 "	72 00
21 " " " " " " " ⅛ to 2½ "	84 00

EXTRA CUTTERS AND CLASPS.

Size, inch..............	12	15	18	21
Per dozen..............	$6 00	7 20	8 00	8 50

Fig. 605.

THE PARAGON PIPE CUTTER.

No. 1—Cuts ¼ to 1¼ inch Pipe......................	$7 50
" 2— " ¾ to 2½ " "	9 50
" 3— " 1¼ to 4 " "	18 00

EXTRA BITS OR JAWS.

No. 1........ $0 40 No. 2........ $0 60 No. 3........ $1 00

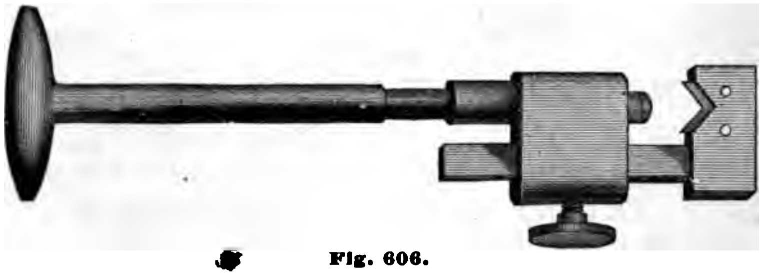


Fig. 606.

PEACE'S PATENT ADJUSTABLE PIPE CUTTER.

No..................	1	2	3
Cuts Pipe, inch..........	⅛ to 1¼	⅛ to 2	1½ to 4
Each..................	$7 00	9 00	16 00
Extra Cutters..........	$0 30	40	60

STANWOOD PATENT PIPE CUTTER.

No..................	1	2	3
Cuts Pipe, inch..........	⅛ to ¾	1 to 2	2 to 3
Case Hardened..........	$6 50	8 00	16 00
Steel Faced..........	8 00	10 00	20 00
Extra Cutter Wheels.......	25	35	50
" Blocks and Wheels..	62	85	1 50

PIPE WRENCHES AND TONGS.

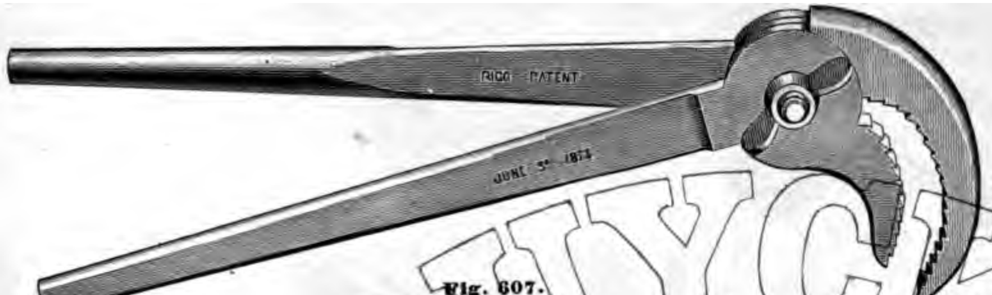


Fig. 607.

THE CLIMAX PIPE WRENCH

But one size is now ready for market.

No. 1—Suitable for ⅛ to 1 inch Pipe, each...... $2

Fig. 608.

B. & C. IMPROVED CYLINDER WRENCH.

WARRANTED STEEL HEAD AND JAW.

Size, inch	10	12	15	18
Size of Pipe, inch	½ to 1	½ to 1¾	½ to 2	½ to 2½
Per dozen	$19 00	22 00	31 00	48 00

PATENT COMBINATION WRENCH.

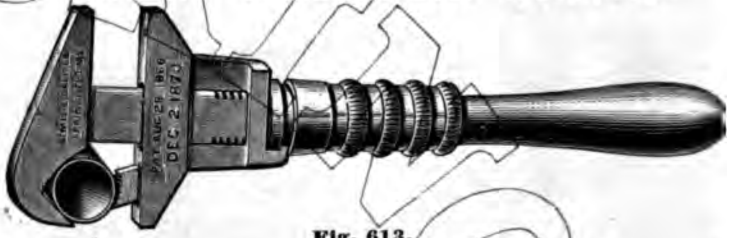


Fig. 613.

Size, inch	10	12	15
Bright, with Long Nut, per doz	$25 25	28 50	40 5

Fig. 609.

MERRICK'S PATENT CYLINDER OR GAS WRENCH.

WITH PATENT NUT OR SLEEVE.

Size, inch	10	12	15
Size of Pipe, inch	½ to 1	½ to 1¼	½ to 2
Per dozen	$20 75	24 00	34 00

Fig. 614.

WHEATCROFT'S PIPE WRENCH.

No. 1—Takes from ⅛ to ½ inch.............. $1
" 2— " " ⅜ to 1 " 2
" 3— " " 1 to 2 " 3

Fig. 615.

ROBBIN'S PATENT PIPE WRENCH.

No. 2—2¼ ft. long, ¼ in. chain, weight 7 lbs., takes 1 to 2 in. pipe .. $5
" 3—3 " 5/16 " " 12 " " 1¼ to 4 " .. 6
" 4—4 " ⅜ " " 26 " " 2 to 6 " .. 9
" 5—5 " 7/16 " " 33 " " 2½ to 8 " .. 12
" 6—6 " ½ " " 50 " " 4 to 10 " .. 16

Fig. 610.

BARWICK PATENT PIPE WRENCH.

No.	0	1	2	3	4	5
Takes Pipe up to, inch	½	¾	1¼	2	3	4
Each	$2 25	3 00	4 00	5 00	9 00	12 00

PATENT COMBINATION WRENCH.

Fig. 611.

Size, inch	10	12	15
Bright, with Short Nut, per doz	$23 00	26 00	37 00

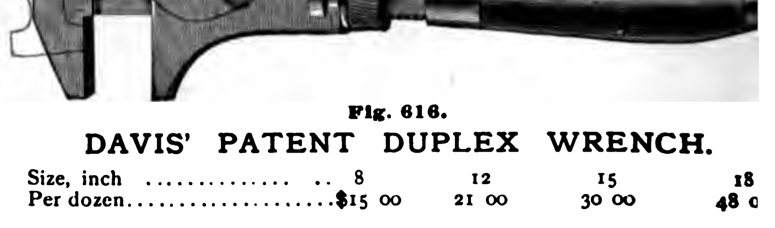


Fig. 616.

DAVIS' PATENT DUPLEX WRENCH.

Size, inch	8	12	15	18
Per dozen	$15 00	21 00	30 00	48 0

Fig. 612.

STILLSON'S PATENT CYLINDER WRENCH.

Length Open, Ins.	6	8	10	14	18	24	36	48
Takes from	⅛ in. Wire to ½ in. Pipe.	⅛ in. Wire to ¾ in. Pipe.	⅛ in. Wire to 1 in. Pipe.	¼ in. Wire to 1½ in. Pipe.	¼ in. Wire to 2 in. Pipe.	¼ in. Wire to 2½ in. Pipe.	½ in. Pipe to 3½ in. Pipe.	1 in. Pipe to 5 in. Pipe
Each	$1 75	$2 00	$2 25	$3 00	$4 00	$6 00	$12 00	$18 00

The 6 inch Wrench, with Screw Driver attachment on end of handle......... .. $2 12—Nickel Plated, extra....... $0

CLEVIS TONGS.

Fig. 616½.

Pipe Size, inch...	2½	3	3½	4	4½	5	6	7	8
Each............	$5 40	6 20	7 00	8 00	9 10	10 00	12 50	15 00	18 00
Clevis Hooks....	1 80	2 10	2 40	2 60	3 00	3 55	4 20	5 00	5 50

SAMSON WRENCH.

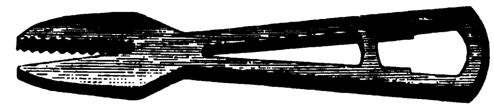


Fig. 621.

No..................	1	2	3	4
Holds Round Iron, in.,	¼ to ¾	½ to 1¼	⅝ to 1½	1¼ to 2½
Per dozen............	$4 50	15 00	30 00	48 00

HUBER'S GAS PLIERS.

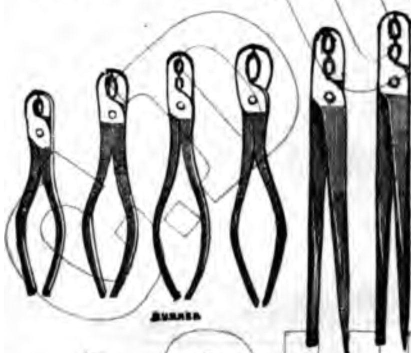


Fig. 617.

HUBER'S CAST STEEL GAS PLIERS.

Size, inch...	6	7	7½	8	9	10	11	12	13	14
Black......	$6 00	7 50	11 00	9 00	12 00	15 00	18 00	24 00	27 00	30 00
Polished...	8 00	9 50	13 00	11 00	14 00	17 00	20 00	26 00	29 00	32 00

GAS PLIERS.

Size, inch...	5	6	7	8	9	10	12
Black......			$8 00	9 00	10 00	11 50	13 50
Bright......	$6 00	7 00	8 00	9 25	10 25	12 50	14 00

ORDINARY PIPE TONGS.

Fig. 618.

Size, inch.	⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4
Each.....	$0 80	90	1 00	1 20	1 50	2 00	2 25	3 00	3 75	4 25	5 25	5 50	6 00

BROWN'S PATENT PIPE TONGS.

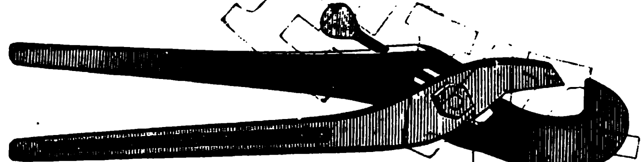


Fig. 619.

No.......	1	1½	2	3	4	5	6	7
Size Pipe	⅛ to ¾	¾ to 1	¼ to 1¼	1 to 2	1½ to 3	2½ to 4	3 to 5	4 to 7
Each.....	$3 00	3 50	4 00	5 00	9 00	12 00	25 00	35 00

PEACE'S PATENT ADJUSTABLE PIPE TONGS.

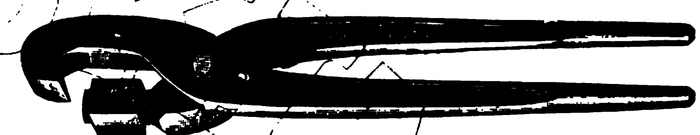


Fig. 622.

No. 0—Grips ⅛, ¼, ⅜, and ½ inch Pipe, and all Burners.......... $2 50
" 1— " ¼, ⅜, ½, ¾, and 1 inch Pipe or Sockets........... 4 00
" 2— " 1, 1¼, 1½, and 2 " " " 7 00
" 3— " 2½, 3, 3½, and 4 " " " 14 00
Extra Adjustable Steel Nuts, No. 0.............................. 50
" " " " " 1.............................. 60
" " " " " 2.............................. 75
" " " " " 3.............................. 1 00

JARECKI'S ADJUSTABLE PIPE TONGS.

Fig. 623.

No. 0—Grips Gas Burner to ¼ inch.............................. $3 00
" 1— " " " 1 " 3 50
" 2— " 1½ inch.............................. 4 00
" 3— " ½ to 2½ inch.............................. 5 00
" 4— " ¾ to 3½ " 9 00
" 5— " 2½ to 6 " 16 00

PAGE'S AUXILIARY JAW.

For common Monkey Wrench, for turning Gas Pipe, or any round bodies which need Pipe Tongs.

Fig. 624.

Jaw for 6 inch Wrench, per dozen.............................. $6 00
" 8 " " " 7 20
" 10 " " " 9 00
" 12 " " " 12 00
" 15 " " " 15 00

MARSHALL PATENT PIPE TONGS.

Fig. 620.

No. 1—⅛ to ¾ inch Pipe.................... $3 50
" 2—¼ to 1 " 4 50
" 3—½ to 2 " 5 50
" 4—1 to 3 " 9 00

STOCKS WITH SOLID AND OPEN DIES, FOR SCREWING BRASS PIPE.

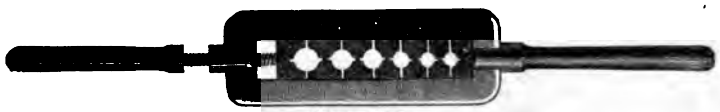


Fig. 625.

This Stock has 6 Open Dies, for screwing ⅜, ½, ⅝, ¾, ⅞, and 1 inch Brass Pipe, without change of Dies.......... $12 00

PATENT SCROLL DIE.

FOR THREADING BRASS PIPE OF ALL SIZES.
(Fig. 626.)
[From] 5-16 to ⅞ inch.

Each.......... $15 00

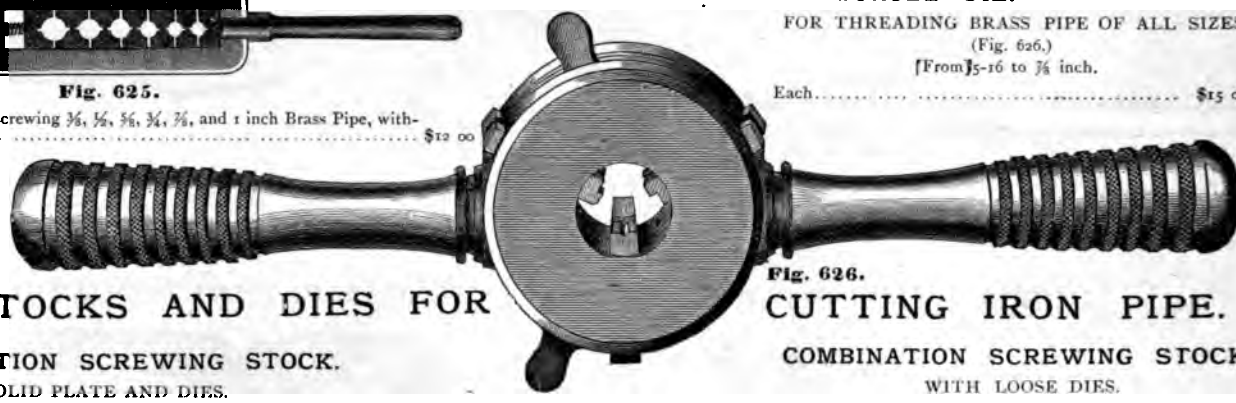


Fig. 626.

STOCKS AND DIES FOR CUTTING IRON PIPE.

COMBINATION SCREWING STOCK.

SOLID PLATE AND DIES.

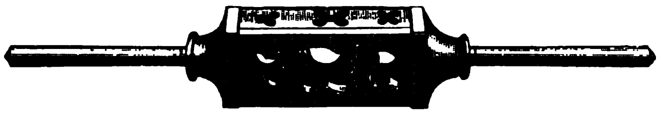


Fig. 627.

No. 1½—Cutting ⅛, ¼, ⅜, ½, ¾, and 1 inch, complete..........	$10 00
Extra Die Plates, cutting ⅛, ¼, and ⅜ inch..........	3 50
" " " " ½, ¾, and 1 "..........	4 00

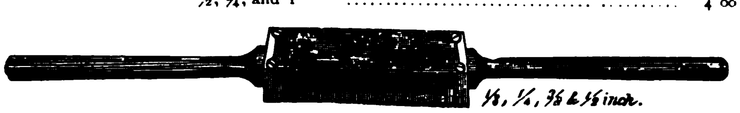


Fig. 628.

No. 0—Solid Plate and Dies, to cut ⅛, ¼, ⅜, and ½ inch Pipe..........	$10 00
" 00— " " " " " ¾ and 1 inch Pipe..........	12 00

COMBINATION SCREWING STOCK.

WITH LOOSE DIES.

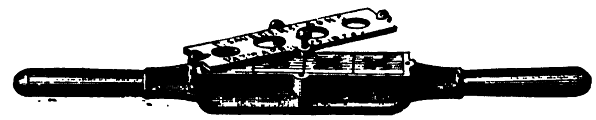


Fig. 632.—No. 0.

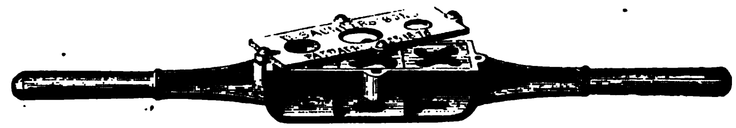


Fig. 633.—No. 00.

No. 0—Cuts ⅛, ¼, ⅜, and ½ inch..........	$8 00
" 00— " ½, ¾, and 1 inch..........	9 00
" 0—Extra Dies, right or left, each..........	1 25
" 00— " " " " "..........	1 50

Fig. 629.

No. 1—Screw Plate, with Solid Dies, to cut ¼, ⅜, ½, ¾, and 1 inch Pipe (Square Dies, 2½x¾ inch) Fig. 629.......... $26 00

No. 2—Screw Plate, with leader screw to cut 1¼, 1½, and 2 inch Pipe (Square Dies, 4x⅞ inch). Fig. 634.......... $30 00

No. 3—Screw Plate, with leader screw to cut 2½ to 3 inch Pipe (Square Dies 5x1¼ inch). Fig. 634.......... 55 00

Fig. 634.

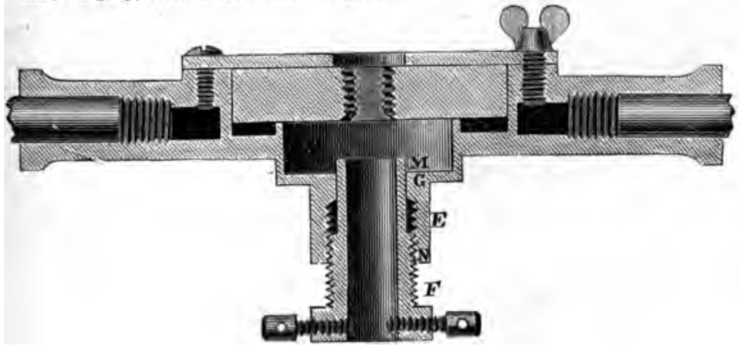


Fig. 630.

This improvement is to effectually prevent the chips and grit from getting between the Feed Screw, F, and its Threaded Socket, E, by the close joint made at M G; thus obviating all trouble ordinarily experienced with the Leader or Feed Screw in this class of Die Stocks.

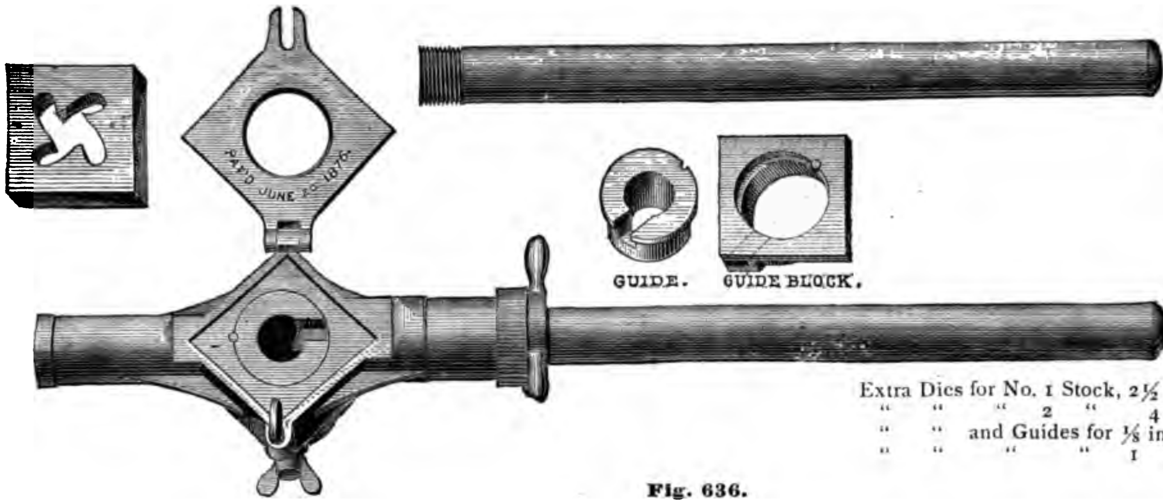
Fig. 635.

Fig. 631.

No. 4—Improved Die Stock, with the patent arrangement. This size is provided with four sockets for the loose handles to fit into.

MALLEABLE IRON SCREWING STOCKS, WITH LOOSE HANDLES AND SOLID DIES, FOR SCREWING IRON PIPE.

No. 1—Complete with ⅛, ¼, ⅜, and ½ in. Dies and Guides..........	Size Dies, 2x½,	$11 00
" 1½— " " ¼, ⅜, ½, ¾ and 1 " "..........	" 2½x¾,	18 00
" 2— " " ¾ and 1 " "..........	" 3x¾,	13 00
No. 2½—Complete with ¾, 1, and 1¼ in. Dies and Guides..........	Size Dies, 4x1,	16 00
" 3— " " 1¼, 1½, and 2 in. Dies, Guides, and Leader Screw,	" 4x1,	23 00
" 4— " " 2½ and 3 " " " "	" 5x1¼,	55 00



COMBINATION DIE PLATE AND PIPE CUTTER.

No. 1—Stock, with Dies, cuts and threads 1 to ¼ inch..	$15 00
No. 1—Stock, without Dies,	7 50
" 2—Stock, with Leading Screw and Dies, cuts and threads 2 to 1¼ inch.....	20 00
No. 2—Stock, with Leading Screw, without Dies......	11 00
Extra Knives for No. 1 Stock,	20
" " " 2 "	30
" Guides " 1 "	25
" " " 2 "	50
Extra Dies for No. 1 Stock, 2½ × ¾ inch....................	1 50
" " " 2 " 4 × 1 "	3 00
" " and Guides for ⅛ inch Pipe....................	2 00
" " " " 1 " to fit No. 2 Stock...	4 00

Fig. 636.

PIPE TAPS AND REAMERS.

Fig. 637.

Fig. 638.

Diameter, inch	⅛	¼	⅜	½	¾	1
Each..	$1 12	1 25	1 50	1 87	2 50	3 12

Diameter, inch	1¼	1½	2	2½	3
Each..........	$3 75	4 62	6 25	10 50	15 00

Humphrey's Combined Drill Reamer and Tap.

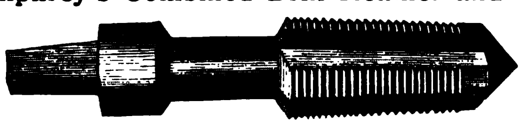


Fig. 639.

Diameter, inch.	¼	⅜	½	¾	1	1¼	1½	2
Each..........	$2 50	2 50	3 00	4 50	6 00	7 25	8 50	10 75

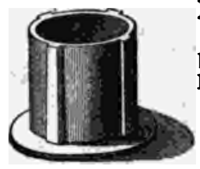


Fig. 640.

EXTRA BUSHINGS, OR GUIDES.

(Fig. 640.)

For Pipe to, in.	½	1	1	1¼	2	3
Each	$0 20	25	30	40	50	1 00

Extra Dies for Pipes.

(Fig. 641.)

RIGHT OR LEFT HAND.

Size, inch..	¼	⅜	½	¾	1
Each......	$3 00	3 00	3 00	3 00	3 00
Size, inch..	1¼	1½	2	2½	3
Each.. ...	$5 00	5 00	5 00	11 00	15 00

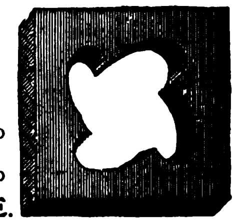


Fig. 641.

DIE HOLDER, OR CAGE.

(Fig. 642.)

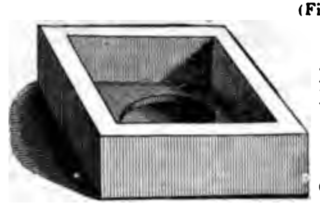


Fig. 642.

For using larger or smaller size dies in pipe stocks.

Each, 30c. and 50c., according to size.

Outside and Inside Chasers.

(Figs. 643 and 644.)

Fig. 643.

⅛ to 4 in. Gas Pipe Threads, each, $0 75

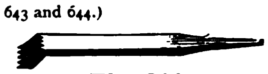


Fig. 644.

Fig. 645.

PIPE DRILLS.

Size, inch......	¼	⅜	½	¾	1	1¼	1½	2
Each..........	$0 75	1 00	1 25	1 50	1 75	2 00	2 50	3 00

CHISELS.

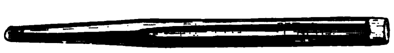


Fig. 646.—HALF-ROUND CHISEL.

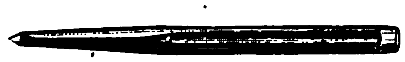


Fig. 647.—DIAMOND POINT CHISEL.

Fig. 648.—COLD CHISEL.

Fig. 649.—SET CHISEL.

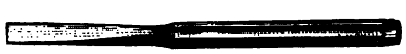


Fig. 650.—CAPE CHISEL.

Fig. 651.—LONG WOOD CHISEL.

Fig. 652.—WALL CHISEL.

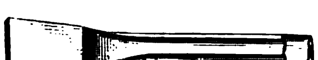


Fig. 653.—DRIVING CHISEL.

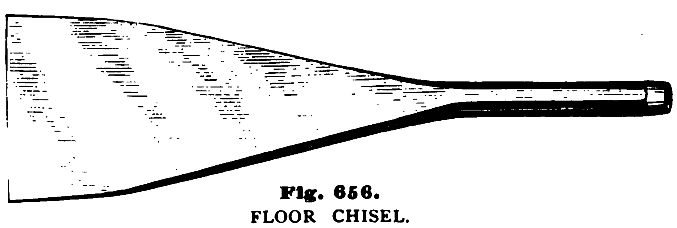


Fig. 656.
FLOOR CHISEL.

Fig. 654.—WOOD CHISEL.

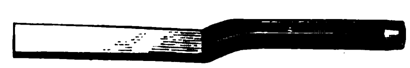


Fig. 655.—CALKING CHISEL.

Fig. 657.—PLASTER CHISEL.

Chisels	Cold.	Cape.	Wall Drill.	Diamond. and Half Round.	Calking. 1.	Calking. 2.	Calking. 3.	Set.	Driving. 1.	Driving. 2.	Driving. 3.	Wood.	Plaster.	L'ng Wood	Floor.
Each....	$0 56	58	51	61	85	77	56	36	1 15	85	82	60	1 84	1 13	2 12

PLUMBERS' TOOLS.

TOOL BAG.

Fig. 658.

Each..... $5 50

DRESSER.

Fig. 659.

Hickory.	Beech.	Boxwood.
$0 60	60	1 25

SIDE EDGE.

Fig. 660.

Hickory.	Boxwood.
$0 35	75

BOSSING STICK.

Fig. 661.

Boxwood.	Dogwood.
$1 25	1 00

COPPER BOLT HATCHET.

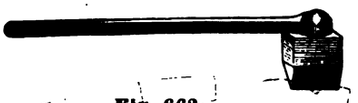


Fig. 662.

Per Pound..... $0 50

CUTTING PLIERS.

Fig. 663.

Each..... $1 25

ROUND IRON.

Fig. 664.

No.	1	2	3
Each...	$0 60	80	1 00

STEEL BENDING PINS.

Each, $0 25

Fig. 665.

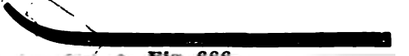


Fig. 666.

PLUMBER'S TORCH.

Fig. 667.

Tin..... $1 25
Brass..... 1 50

CHARCOAL FURNACE.

Fig. 668.—Half-Round Bar.

No. 2—12 inch diam. on Top...	$1 50	No.	Each. Box-wood.	Hick-ory.
" 3—13 " " " ...	1 75	1	$0 25	15
" 4—14 " " " ...	2 00	2	35	20
" 5—15 " " " ...	2 25	3	50	35

SOIL CUP.

Fig. 669.

Each.....$0 50

TURN PIN.

Fig. 670.

Each, $0 50

Gas Fitter's Lamp.

Fig. 671.

Each..... $2 00

SHAVE HOOK.

Fig. 672.

Each..... $0 50

PLUMBER'S FURNACE.

Fig. 675.

For Melting Lead, complete, $15 00

SOLDERING COPPER, POINTED.

Per Pound, $0 50

Fig. 673.

Fig. 674.

Plumbers' Wiping Cloths, Ticking, each.... $0 25
" " " Moleskin, " 35

Plumbers' Looking Glasses, each..... $0 40
" **Knives,** each..... 1 25

MELTING POTS.

Diameter of Top.....	5	6	6½	8	9	10½	13½
Each.....	$0 50	65	75	1 20	1 30	2 00	3 75

Fig. 676.

Fig. 677.

Fig. 678.

Fig. 679.—Various Lengths.

BLOW PIPE.

Length, inch.....	8	9	10	11	12
Each.....	$0 25	30	35	45	
With Bulb.....	45	50			

BASIN WRENCH.

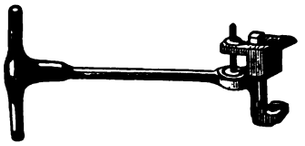


Fig. 680.

Each..... $1 25

PATENT HOOK.

Fig. 681.

Each..... $0 15

GREASE BOX.

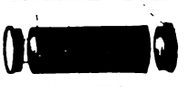


Fig. 682.

For Grease, Resin, and Flour..... $1 75
For Grease and Resin only..... 1 50

CHIPPING KNIFE.

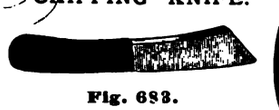


Fig. 683.

No. 1—4 in. Blade, $0 50
" 2—5 " 60
" 3—6 " 75

TAP BORER.

Fig. 684.

Each.....$0 50

AUGER.

Fig. 685.

Size Gas Pipe, inch.....	¼	⅜	½	¾	1	1¼	1½	2
Each.....	$1 15	1 35	1 60	2 25	2 75	3 25	3 60	4 50

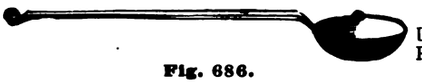


Fig. 686.

WROUGHT IRON LADLES.

Diam., ins.	2½	3	3½	4	4½	5	6	8	10	12
Per dozen,	$2 50	3 25	3 75	4 50	5 25	6 50	8 00	18 00	24 00	36 00

GAS FITTER'S CEMENT.

5 lb. packages, per lb..... $0 20

For other Tools not specified above, see other parts of this book.

YOUNG'S WATER AND GAS MAIN TAPPING MACHINE.

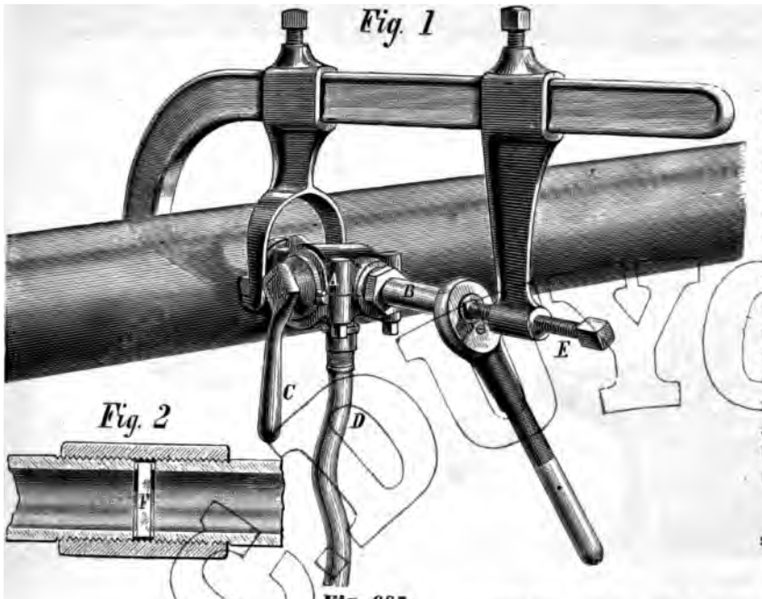


Fig. 687.

PATENTED MARCH 18, 1873.

The two parts of drill case (A), are united by bolts, and receive the tap (B). At the end nearest the pipe a socket is formed to receive a packing gasket, in order to make a water-tight joint. The handle (C), communicates with a cock within, to close the apparatus when the drill is removed, said cock having a notch to allow of the passage of the drill. Bushings in drill case fit different sized taps. Lugs project on outside of socket end of drill case, so that drill case can be clamped to main as shown in engraving. The hose at D serves to conduct chips away The combined drill and tap (B) is operated by the ratchet (R), and fed by the screw (E). The machine is clamped to main, as shown in engraving. The hole is drilled and tapped at one operation. The tap is then drawn back, the handle (C) drawn to the front and tap removed. The orifice is thus closed ready to reopen and force connection into main, the stuffing box on outside of drill case making a water tight joint around connection while being forced in through machine. The main bar, arm, and screws are of cast steel, the body of machine of brass, thus making it a *Strong and Durable Machine.*

Full printed instructions for using machine accompany each one sold.

COMPLETE FOR USE ON 3 INCH TO 12 INCH MAINS.

With Bushes and Taps for ⅜ inch and ½ inch Service-Pipe	$90 00
" " " " ½ " " ¾ " " "	100 00
" " " " ⅝ " ½ inch and ¾ inch Service-Pipe	110 00
" " " " ½ " ¾ " " 1 " "	125 00
" " " " ¾ " ½ " " ¾ and 1 inch Service-Pipe	135 00
Extra Steel Main Bar, suits 6 inch to 20 inch Mains	30 00

For price of machines adapted to Improved Self-Closing Valve, advance 15 per cent

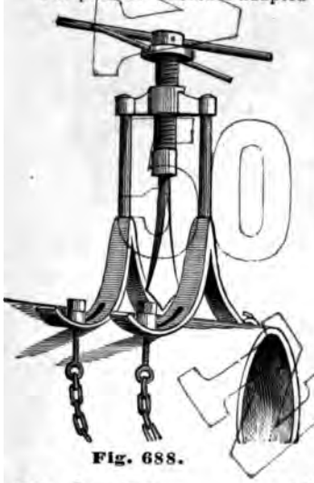


Fig. 688.

IMPROVED DRILL STOCK.

(Fig. 688.)

This stock is made to drill, ream, and tap holes in pipe without Ratchet Drill.

Complete, including Drills, ⅛ to 2 inches $25 00

PATENT IMPROVED DRILL STOCK.

(Fig. 689.)

This stock is more compact than Fig. 688, requires only one chain, turns with plain lever or ratchet wrench.

Complete, including Drills, ⅛ to 2 inches	$25 00
Ratchet Wrench, extra	5 00

Fig. 689.

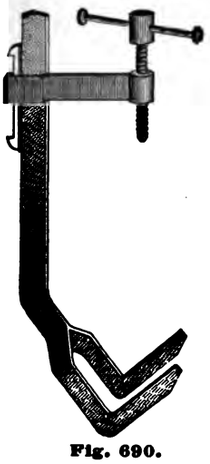


Fig. 690.

CROW FOR DRILLING AND TAPPING STREET MAINS.

(Fig. 690.)

No. 1. For Drilling and Tapping from 1½ to 3 inches	$10 00
" 2. " " " " 1½ to 6 "	13 00
" 3. " " " " 1½ to 12 "	16 00

SPERRING'S PATENT DRILLING AND TAPPING MACHINE.

This machine will drill, ream, and tap a main, and insert stop cock at one operation, without the necessity of removing the machine or of stopping off the supply in main or reducing the pressure; and during the operation there is no possibility of wasting water.

Complete, with one each ½ and ¾ inch Combined Drill, Reamer, and Tap $100 00

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PIPE VISES.

PATENT COMBINATION VISE.

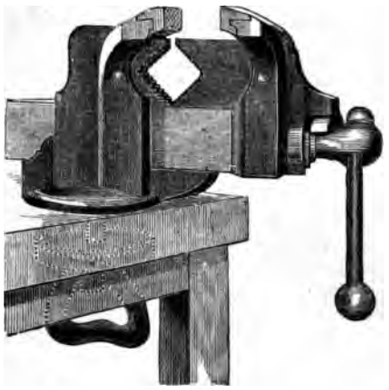


Fig. 691.

No. 1—Takes 2 inch Pipe..... $16 00
" 2— " 2 " 20 00

Malleable Iron Pipe Vise.

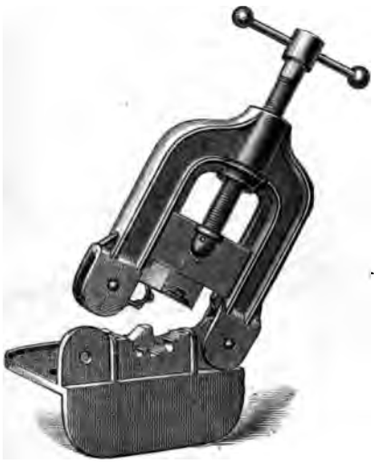


Fig. 692.

No. 1—⅛ to 2 inch..... $10 00
" 2—¼ to 3 " 13 00

NASON'S PATENT PIPE VISE.

Fig. 693.

No. 1—To hold Pipe from ⅛ to 1¼ in. diam. $15 00
" 2— " " " ⅛ to 2 " 18 00
" 3— " " " ¼ to 3 " 30 00

Pipe Vise with Angle Plate.

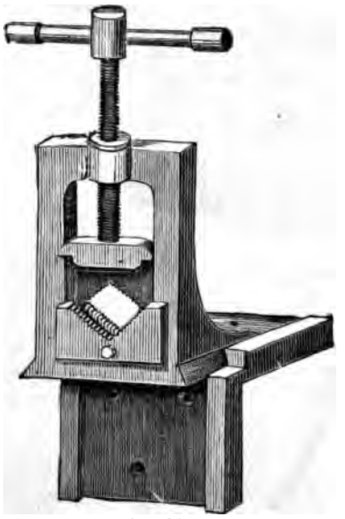


Fig. 694.

No. 1—To hold Pipe from ⅛ to 2 in. diam. $15 00
" 2— " " " ½ to 3 " 22 00

MALLEABLE IRON VISE.

Fig. 695.

⅛ to 2 inch..... $8 00

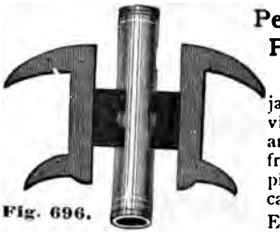


Fig. 696.

Peace's Patent Pipe Clamp.

Made to fit on the jaws of an ordinary vise, revolves to any angle, and grips from ⅛ to 2 inch pipe. The grips are cast steel.

Each..... $5 00

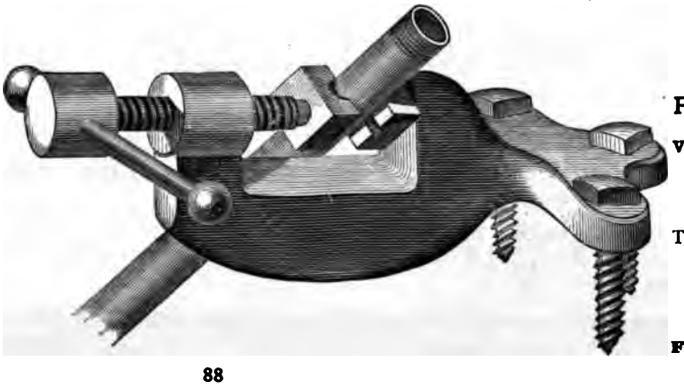


Fig. 701.

Peace's Patent Revolving Grip, Open-Jaw Pipe Vise.

Takes Pipe ⅛ to 2 inch..... $12 00

Robbins' Patent Pipe Vises.

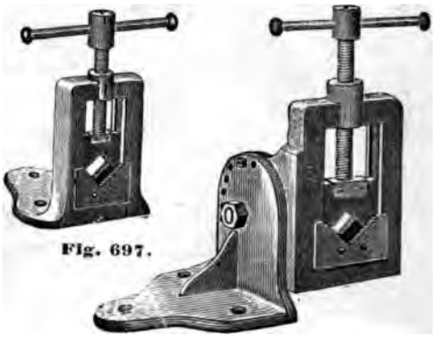


Fig. 697.

Fig. 698.

No. 1—Takes ⅛ to 2 inch Pipe..... $12 00
" 2— " ⅛ to 3 " 20 00

Saunders' Patent Pipe Vise.

Fig. 699.

No. 1—To hold Pipe from ⅛ to 2 in. diam. $15 00
" 2— " " " ½ to 3 " 22 00

ORDINARY PIPE CLAMP.

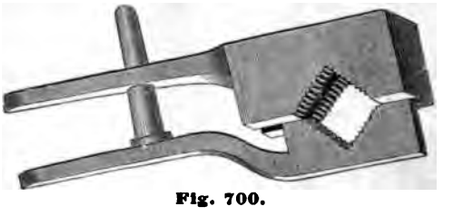


Fig. 700.

Grips from ⅛ to 2 inches..... $9 00

UNION AND BACKUS VISE COMBINED.

(Figs. 702, 703, 704, and 705.)

PIPE VISE.

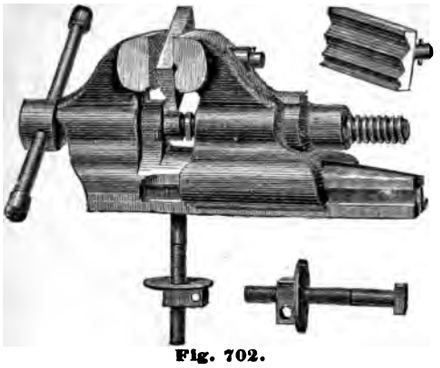


Fig. 702.

Width of Jaw, 4 ins., weight, 57 lbs.....	$17	50
" " 5 " " 79 "	23	00
" " 8 " " 153 "	33	00

FINISHING VISE.

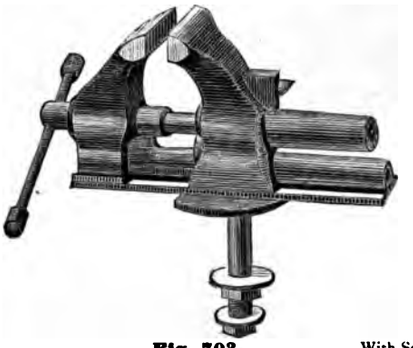


Fig. 703.

		With Seat, Extra.
Width of Jaw, 3 ins., weight, 24 lbs....	$6 50	$1 00
" " 4 " " 42 " ...	9 00	1 25
" " 5 " " 60 " ...	14 50	1 75

COACH MAKERS' VISE.

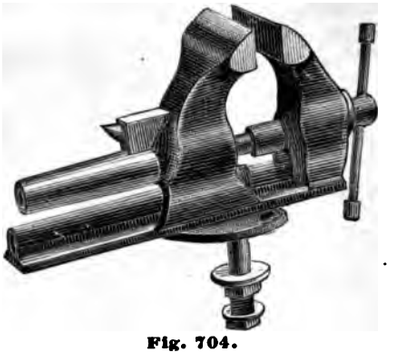


Fig. 704.

These Vises have smooth jaws, and are made especially for coach makers' use. The width of the jaw is 4 inches; depth of face of jaw, 2 inches; distance from the top of jaw to the screw, 5 inches; jaws open 8 inches; weight, 52 lbs.

Each..... $10 00 | With Seat, extra, $1 25

HEAVY OR CHIPPING VISE, COVERED SCREW.

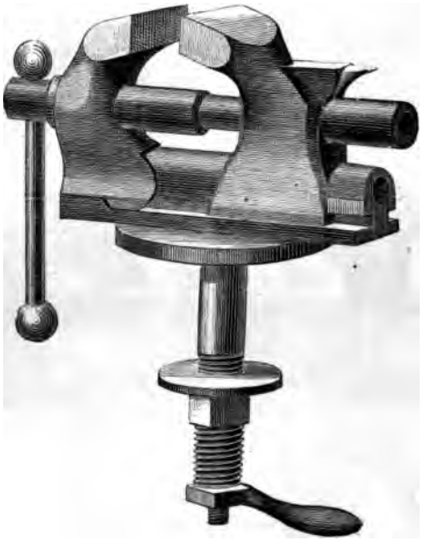


Fig. 705.—Heavy or Chipping Vise, Covered Screw.

Width of Jaw, 1½ in., weight, 3½ lbs...	$3	00	With Iron Seats, extra,	$0	50
" " 1¾ " " 5 " ..	3	50	" " "		50
" " 2 " " 9 " ..	4	00	" " "		50
" " 2½ " " 22 " ..	5	50	" " "		75
" " 3 " " 39 " ..	7	00	" " "	1	00
" " 3½ " " 47 " ..	9	00	" " "	1	00
" " 4 " " 56 " ..	10	00	" " "	1	25
" " 4½ " " 67 " ..	12	50	" " "	1	50
" " 5 " " 75 " ..	17	00	" " "	1	75
" " 6 " " 116 " ..	25	00	" " "	2	00
" " 7 " " 169 " ..	30	00	No Seat.		

SMITH'S IMPROVED HEAVY CHILLED BEAM VISE.

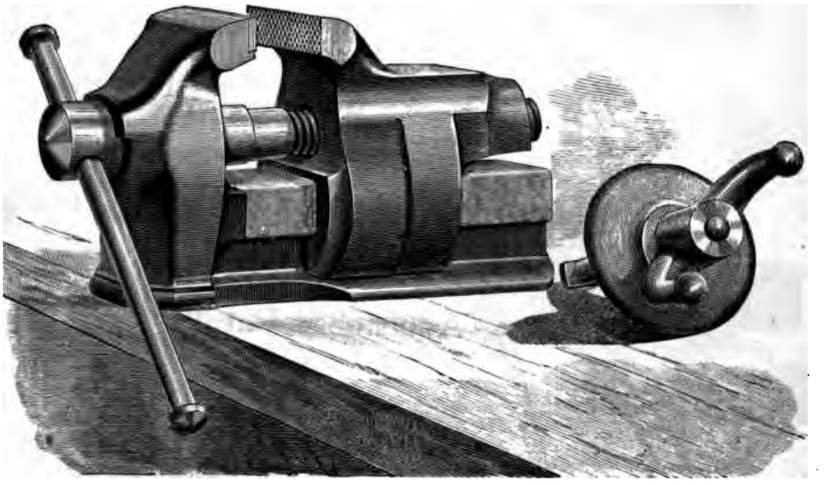


Fig. 706.

No. 2—2 × ⅝ inch Jaw, weight, 15 lbs.....	$3	50
" 3—2 × ¾ " " 30 "	6	00
" 4—4 × ⅞ " " 45 "	8	00
" 5—5 × 1 " " 80 "	12	50
" 6—6 × 1¼ " " 125 "	17	00

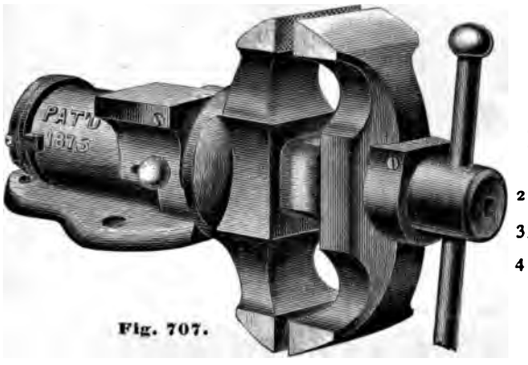


Fig. 707.

PENFIELD PATENT DOUBLE JAW VISE.

2 inch Jaw.....	$6	00
3½ "	10	00
4 "	12	00

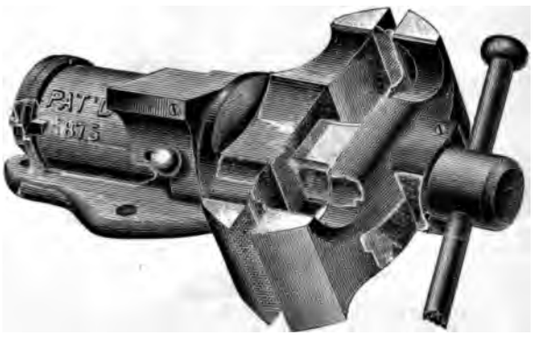


Fig. 708.

HOWARD VISES.

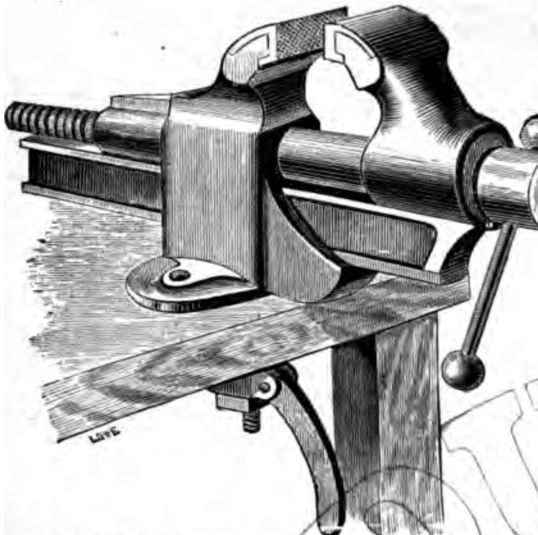


Fig. 709.—PARALLEL BENCH VISE.

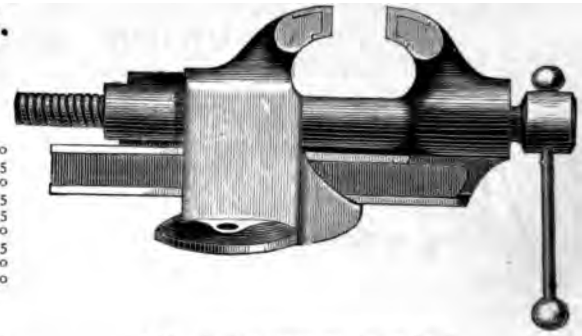


Fig. 710.—PARALLEL BENCH VISE.

PARALLEL BENCH VISE.

NEW STYLE—SWIVEL.

(Fig. 709.)

2 inch Jaw	$4 50
2½ " "	5 75
3 " "	7 00
3½ " "	8 25
4 " "	10 75
4½ " "	14 00
5 " "	19 25
5½ " "	23 50
6 " "	28 50

NEW STYLE—FIXED.

(Fig. 710.)

2 inch Jaw	$4 00
2½ " "	5 00
3 " "	6 25
3½ " "	7 00
4 " "	9 00
4½ " "	11 75
5 " "	16 25
5½ " "	20 00
6 " "	24 00

FIXED—(Fig. 711.)

Length of Jaw	3	inches, weight	25½	lbs.		$5 50
"	3½	"	"	31½	"	6 50
"	4	"	"	41	"	8 50
"	4½	"	"	52½	"	10 75
"	5	"	"	93	"	16 00
"	6	"	"	113½	"	23 75
"	7	"	"	184	"	34 50

SWIVEL—(Fig. 713.)

Length of Jaw	2	inches, weight	7½	lbs.		$4 00
"	3	"	"	31½	"	6 25
"	3½	"	"	38½	"	8 00
"	4	"	"	48	"	10 00
"	4½	"	"	61	"	13 25
"	5	"	"	104½	"	18 50
"	6	"	"	129	"	26 00
"	7	"	"	194	"	36 00

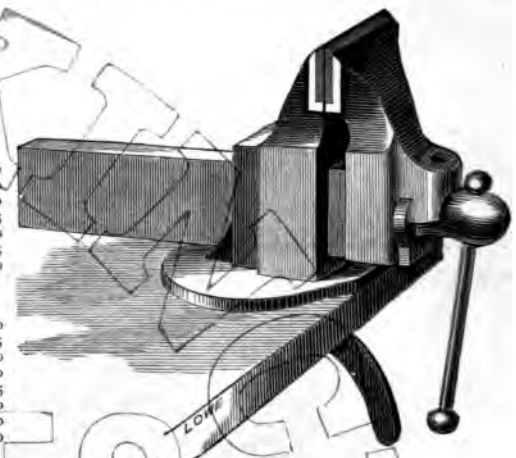


Fig. 712.—COACH MAKERS' VISE.

Fig. 711.—PARALLEL BENCH VISE.

COACH MAKERS' VISES.

SWIVEL—(Fig. 712.)

No. 1, Length of Jaw, 4 inches...................$12 50

FIXED—(Fig. 714.)

No. 2, Length of Jaw, 4 inches, weight 37½ lbs.......$10 00

Fig. 714.—COACH MAKERS' VISE.

Fig. 713.—PARALLEL BENCH VISE.

SIMPSON'S
Adjustable Parallel Vises.

(Figs. 715, 716, and 717.)

COACH MAKERS' VISE.

Width of Jaw, 4 in., Jaws Open, 10½, weight, 48 lbs., $12 00

(Fig. 716.)

No. 0.	Width of Jaw, 1 inch,	Jaws Open, 1¼ inch,	weight,	1¼	lbs.	$1 50
" 1.	" " 1½ "	" " 1¾ "	"	2¾	"	2 25
" 2.	" " 2 "	" " 2 "	"	5¾	"	3 00

Fig. 716.—CLAMP VISE.

No. 0 has steel jaws, not hardened.

Nos. 1 and 2 have steel jaws, hardened, rough or smooth.

Smooth jaws will be sent in all cases, unless otherwise ordered.

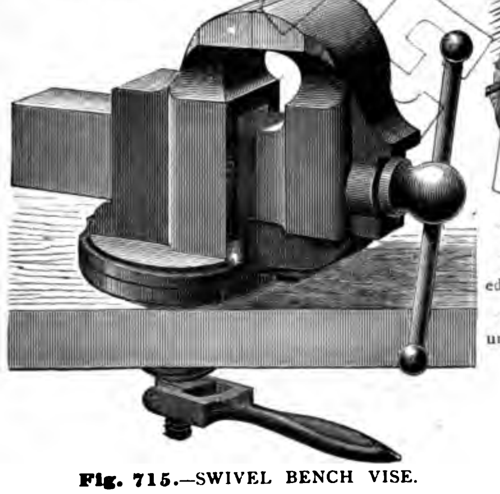


Fig. 715.—SWIVEL BENCH VISE.

Width of Jaw, 2¼ inches,	Jaws Open, 2¾ inches,	weight,	10 lbs.	$4 25
" " 2½ "	" " 3½ "	"	16½ "	5 50
" " 3 "	" " 4 "	"	28 "	7 50

Fig. 717.—STATIONARY BENCH VISE.

Width of Jaw, 3½ inches,	Jaws Open, 5 inches,	weight,	36½ lbs.	$8 00
" " 4 "	" " 5¾ "	"	48 "	10 25
" " 4½ "	" " 6½ "	"	65 "	12 50

STEPHENS' PATENT PARALLEL VISE,

WITH SWIVEL, TAPER, PIPE, AND OTHER ATTACHMENTS.

Fig. 718.—Vise and Swivel, complete.

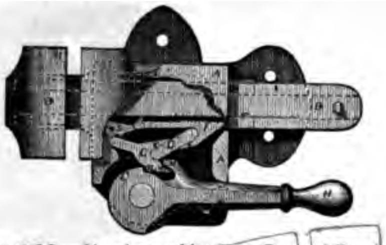


Fig. 719.—Showing working Parts Cam and Toggle.

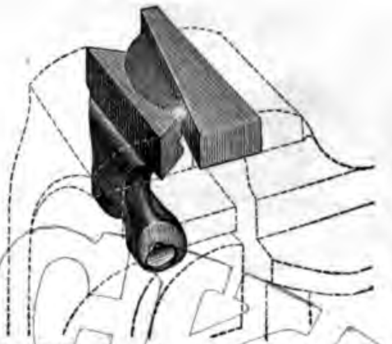


Fig. 720.—Taper Attachment for irregular work.

Fig. 721.—Pipe Attachment

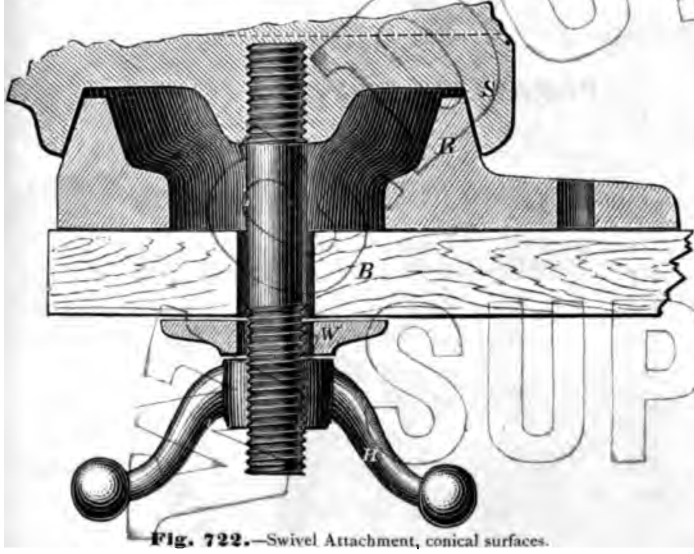


Fig. 722.—Swivel Attachment, conical surfaces.

ROUGH CUT OR SMOOTH JAWS.

Width of Jaw, ins.	Opens, inches.	Weight, lbs., Flat Vise.	Weight, lbs., Swivel Vise.	Flat Vise.	Swivel Vise.
2	2¼	2	3	$4 00	$4 75
2¾	3	12	14	5 00	6 50
3½	5	35	42	9 00	10 50
4½	6½	60	66	12 50	14 50
5½ Ext'n Hdle.	9	110	120	22 00	26 00
6½ " "	11	160	175	33 00	39 00

Filers' Vises, same sizes and prices.

Square Anvils, for Jewelers' 2 inch Vise.................. $0 50
Horn " 1 00
" " on Pedestal.............................. 2 00

Fig. 723.—Jewelers' Swivel Table Clamp. No injury to table.

Coach or Wood Workers' Vises,

Including our Patent Square Faced Attachments. (Fig. 725.)

	Weight, Flat Vise.	Weight, Swivel Vise.	Flat Vise.	Swivel Vise.
3½ in. Vise, with a holding surface of 4x4½ ins., opens 8 inches,	43 lbs.	50 lbs.	$15 00	16 50
4½ " " " " 5x5½ " " 11 "	70 "	75 "	20 50	22 50

Fig. 724.—Jewelers' Flat Table Clamp. No injury to table.

Fig. 725.—Coach, Wood Workers', or Harness Makers' Attachment. They present the largest possible face surface, and will hold anything firmly, yet without injury. Made for every size of vises.

TAPER ATTACHMENTS.

Size, inch	2	2¾	3½	4½	5½	6½
Each	$2 00	2 75	4 00	5 50	7 50	10 00

PIPE ATTACHMENTS.

Size, inch	2¾	3½	4½	5½	6¼
Each	$2 75	4 00	5 50	7 50	7 50

TABLE VISE CLAMPS, JAPANNED.

Size, inch	2—Flat.	2—Swivel.	2¾—Flat.	2¾—Swivel.
Each	$1 00	2 00	2 00	3 00

Fig. 726.

BRASS VISE CAPS.

(Fig. 726.)

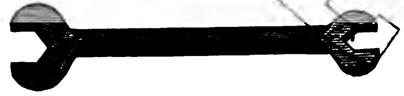
They fit and keep in their place. Never fly up or drop off. No Vise complete without them.

Size, inch	2	2¾	3½	4½	5½	6½
Each	$0 50	75	1 00	1 25	2 00	2 50

WOOD WORKERS', COACH, OR HARNESS MAKERS' ATTACHMENTS.

(Fig. 725.)

Size, inch	2¾—3x3	3½—4x4½	4½—5x5½
Each	$3 00	4 00	5 00



Extra for Nickel-Plating Jewelers' Vises and Attachments.

2 inch Flat or Swivel Vises, extra finish, each.... $3 50   2 inch Swivel Table Clamp, each.............. $1 50
2 " Taper Attachment, each.................. 1 00   2 " Vise Caps, each.......................... 50
2 inch Horn Anvil, on Pedestal, each........... $0 60

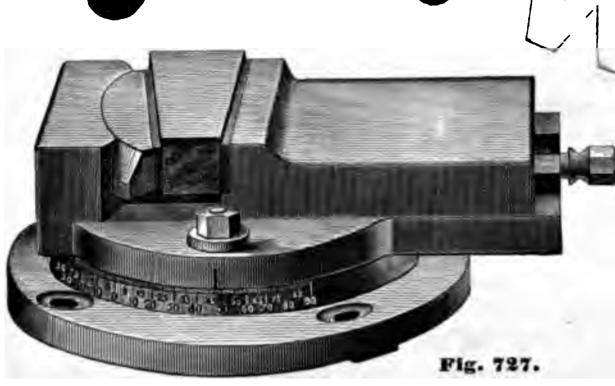


Fig. 727.

STEPHENS' PATENT PLANER VISE.

(Fig. 727.)

Size.	Width of Jaw.	Depth of Jaw.	Jaw Opens.	Ext. Length when closed.	Diameter of Circular Base.	Entire Height.	Weight.	Each.
AA	15 in.	3 in.	13 in.	29⅜ in.	24½ in.	8½ in.	475 lbs.	$160 00
BB	10 "	2 "	10 "	23⅛ "	19 "	7½ "	310 "	105 00
CC	8 "	1½ "	8 "	21 "	14½ "	5½ "	140 "	80 00
DD	6 "	1¼ "	7 "	16 "	12½ "	4⅞ "	85 "	56 00

Fig. 727 shows Stephens' Patent *Planer* and *Shaper Vise*, with Self-Adjusting *Taper Attachment*, for holding any kind of Bevel, Taper, or Irregular Work. Graduated Base.

PARKER'S VISES.

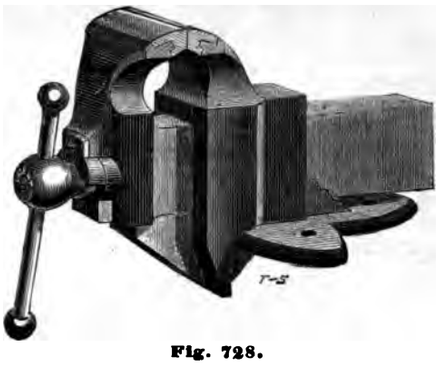


Fig. 728.

PARALLEL VISES.

BLACK.

Length Jaw, Inches.	Parallel, Ea. (Fig. 728).	Swivel, Ea. (Fig. 729).
1¾		$4 00
2¼		5 00
3¼	$6 25	7 00
3⅝	7 00	8 75
4¼	9 00	11 00
4¾	11 75	14 50
5⅜	16 25	20 50
6⅛	24 00	
8⅛	50 00	

Fig. 729.

PARALLEL SWIVEL VISES.

GREEN.

Made by Parker, but without his Improvements.

Length Jaw, Inches.	Parallel, Each.	Swivel, Each.
2¼		$4 00
3⅜		6 25
3¼	$5 50	
3⅝	6 50	8 00
4¼	8 50	10 00
4¾	10 75	13 25
5⅜	16 00	
6⅛	23 75	

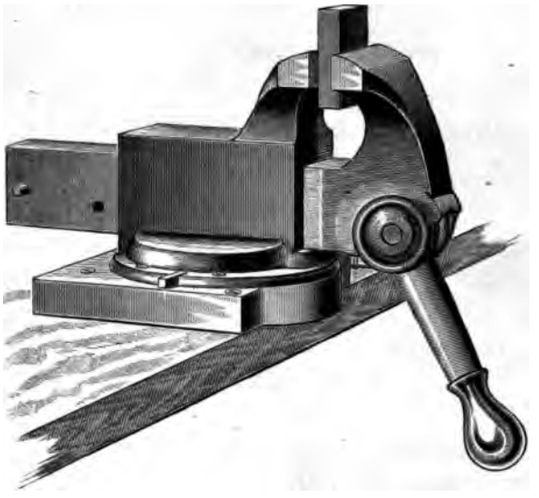


Fig. 730.

HALL'S

PATENT SUDDEN GRIP VISES.

Size of Jaw, inches,	2	3	4	Coach.
Each	$5 00	8 50	12 50	14 00

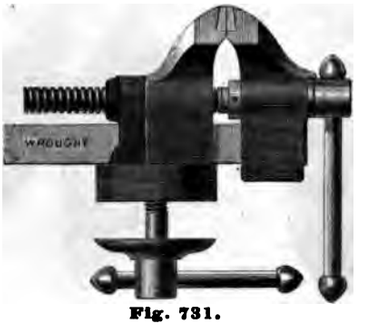


Fig. 731.

MERRELL'S

PATENT PARALLEL SWIVEL VISE.

Wrought Iron Bar—Solid Box.

Width of Jaw, inches	4	5
Opens, inches	8	9
Weight, lbs.	50	80
Size of Wrought Bar, inches	2¼ × 1¼	2¼ × 1¼
Diameter of Screw, inches	1⅛	1⅜
Price	$11 00	$13 00
Width of Jaw, inches	6½	8
Opens, inches	10	12
Weight, lbs.	130	167
Size of Wrought Bar, inches	2½ × 1½	3 × 1½
Diameter of Screw, inches	1⅝	1⅝
Price	$17 00	$22 00

NEW DOUBLE SCREW PARALLEL "LEG" VISE.

Fig. 732.

No. 1—Jaws, 3½ × ¾ inch, Screws, ⅞ inch diameter, Lever, 9 inches long, Opens 4¼ inches.... $8 00
" 2— " 4½ × 1 " " 1⅛ " " 13 " " 5¼ " 12 00
" 3— " 5¼ × 1⅛ " " 1¼ " " 16 " " 6½ " 17 00
" 4— " 6¼ × 1¼ " " 1½ " " 19 " " 7½ " 22 00
" 5— " 7 × 1½ " " 1¾ " " 24 " " 9 " 30 00
" 6— " 8 × 1½ " " 1¾ " " 26 " " 10 " 34 00

All sizes of these Vises furnished with Swivel Attachment, at an additional cost of $1 00 to $3 00.

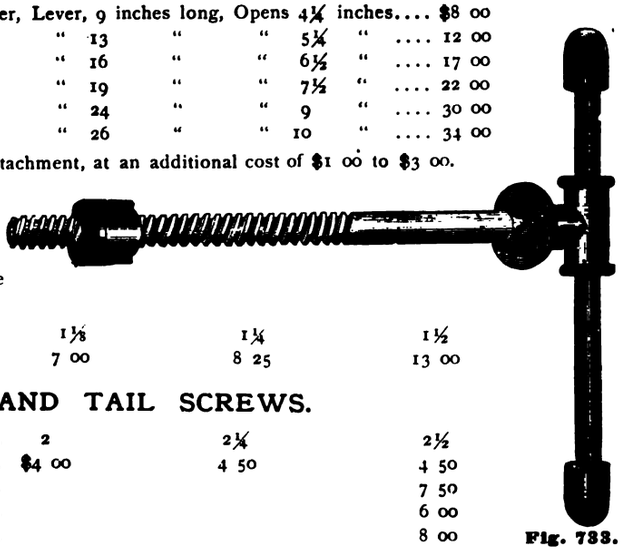


Fig. 733.

WROUGHT IRON BENCH SCREWS.

Double Thread, Wooden Handle, and Movable Collars.

Size, inch	1	1⅛	1¼	1½
Per dozen	$5 75	7 00	8 25	13 00

WOODEN BENCH AND TAIL SCREWS.

Size, inch	2	2¼	2½
Per dozen	$4 00	4 50	4 50
Brown's Patent Beveled Thread			7 50
Improved Square Thread			6 00
Tail Screws			8 00

SOLID BOX WROUGHT IRON VISES.

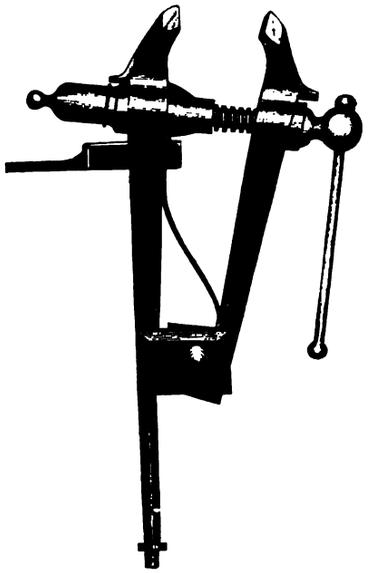


Fig. 734.

P. Wright, Imported, 18 to 22 cents per pound.
American..... 15 to 20 " "

STEVENS' PATENT HAND VISES.

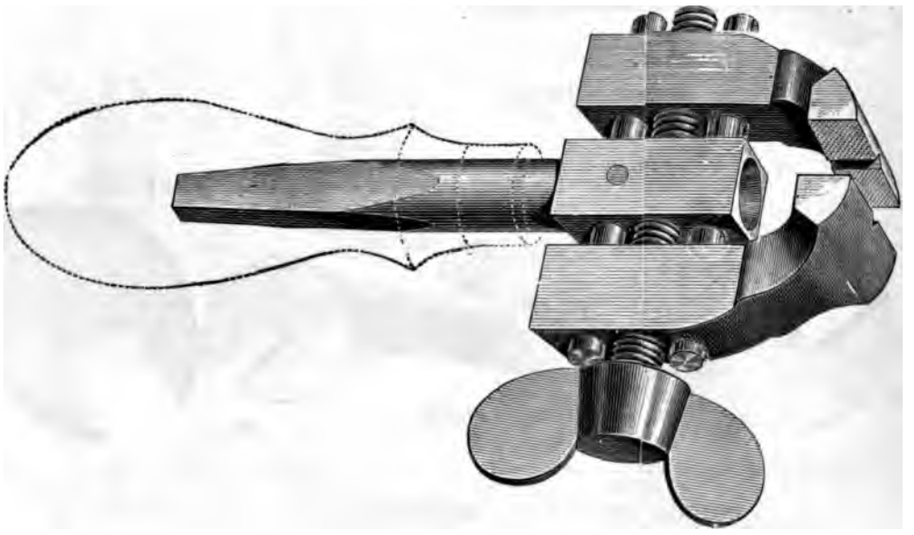


Fig. 735.

This Vise will centre and hold firmly any tool placed in it, and may be used in the hand, on a bench, lathe, or bit stock.

Per dozen..... $24 00

Fig. 736.

HAND VISES.

Size, inch	3 to 4½	5	5½	6
Black.....each,	$0 75	1 00	1 25	1 50
" Extra Quality..... "	1 00	1 25	1 50	2 00
Extra Quality, Polished Handle.....Size, inch,	3	3½	4	4½	5
Each.....	1 50	1 50	1 50	1 50	2 00

STUBS' HAND VISES.

Size, inch	3	3½	4	4½	5	5½	6
Each.....	$1 15	1 25	1 35	1 50	2 00	2 50	3 25

FRENCH PIN VISES.

Per dozen..... $9 00

HAND VISE TABLE ATTACHMENT.

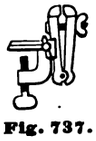


Fig. 737.

Per dozen..... $6 00

IMPROVED HAND VISE.

Fig. 738.

Per dozen..... $24 00

COE'S PATENT SCREW WRENCHES.

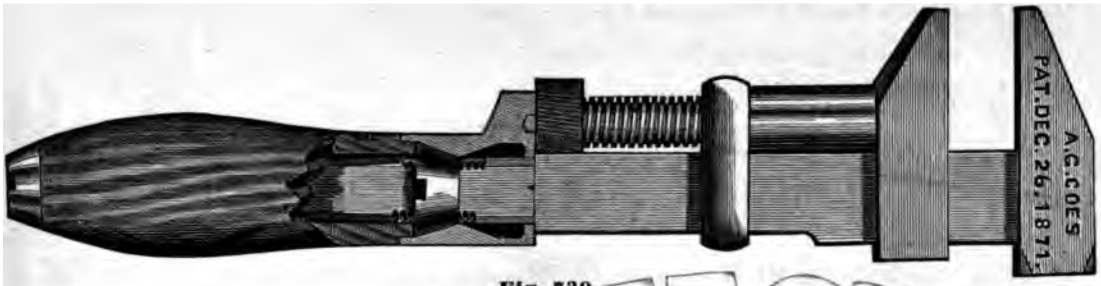


Fig. 739.

Size, inch.	Black, per dozen.	Bright, per dozen.	No. of doz. in Case.
6	$9 00	$10 00	6
8	10 00	11 00	6
10	12 00	14 00	6
12	14 00	16 00	6
15	24 00	26 00	3
18	30 00	32 00	2
21	36 00	38 00	2

LINDSAY'S PATENT SCREW WRENCHES.

Black,	12 inch, per dozen		$14 00
"	15 "	"	24 00
Polished,	12 "	"	16 00
"	15 "	"	26 00

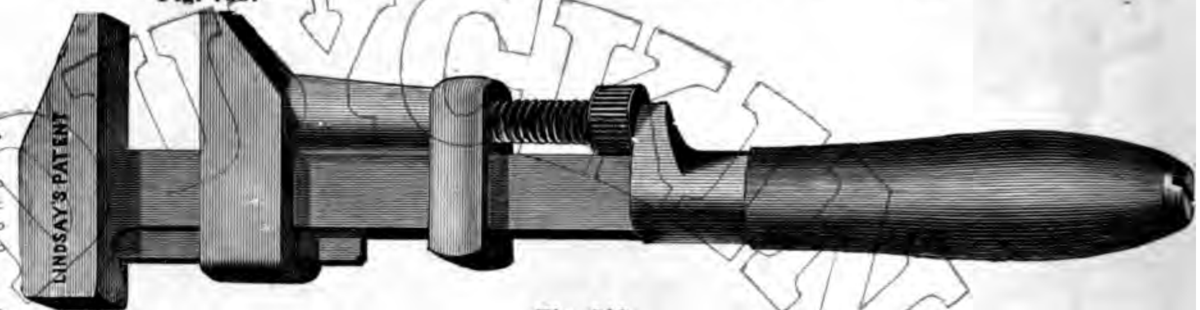


Fig. 740.

SPAULDING'S IMPROVED FORGED WRENCHES, OF REFINED IRON.

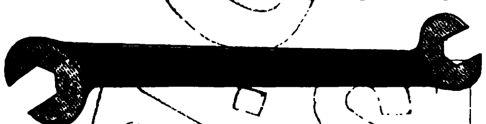


Fig. 741.

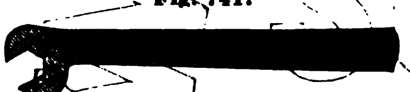


Fig. 742.

SINGLE ENDS.

No.	Size of Bolt.	Length of Handle, in.	Per doz.
1	3/8	9	$2 70
2	1/2	11	3 60
3	5/8	14	5 40
4	3/4	16	8 10
5	7/8	18	10 80
6	1	20	14 40
			Per Pound
7	1 1/8	24	18
8	1 1/4	28	18
9	1 1/2	36	18

DOUBLE ENDS.

No.	Size of Bolt.	Length of Handle, in.	Per doz.
1	3/8 and 1/2	10 1/2	$5 40
2	1/2 " 5/8	13	7 20
3	5/8 " 3/4	16	10 80
4	3/4 " 7/8	18	16 20
5	7/8 " 1	20	21 60
6	1 " 1 1/8	24	28 80
			Per Pound.
7	1 1/8 " 1 1/4	28	24
8	1 1/4 " 1 1/2	36	24

BAXTER WRENCHES.

Fig. 743.—Diagonal Wrench.

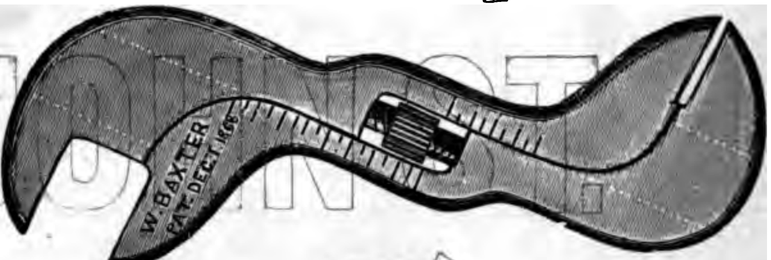


Fig. 744.

Per dozen, 4 inch .... $5 00 6 inch............ 7 50 8 inch........ .... 10 00 10 inch........ ... 15 00 12 inch .... 20 00 15 inch....... .... 25 00

BRIDGE BUILDERS' WRENCH.

Fig. 745.

No. 1—3 foot Lever,	1 1/4, 1 1/2 inch Square Nut,		1 1/2, 1 3/4 inch Hexagon Nut			$9 00
" 2—3 "	1 3/4, 2	" "	2, 2 1/4, 2 1/2	"	"	12 00
" 3—3 1/4 "	2 1/4, 2 1/2	" "	2 3/4, 3, 3 1/4	"	"	15 00
" 4—3 1/2 "	2 3/4, 3, 3 1/2, 4	" "	3 1/2, 3 3/4, 4	"	"	18 00
" 5—3 1/2 "	3 1/2, 3 3/4	" "	4 1/4, 4 1/2	"	"	24 00

The above prices cover only one gear for each wrench.

EXTRA GEARS.

No. 1.... $1 00 No. 2.... 2 00 No. 3.... 3 00 No. 4.... 3 50 No. 5.... 4 00

RATCHET WRENCH.

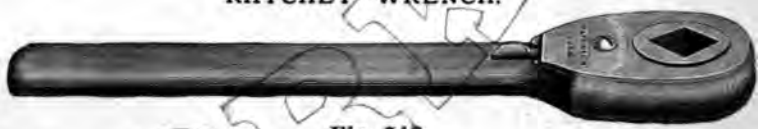


Fig. 746.

No. 1 —10 inch Lever—Any *one* Gear on the list		$3 00
" 2 —12 " " " " "		4 00
" 3 —15 " " " " "		5 00
* " 3 1/2—18 " " " " "		6 00
" 4 —18 " " " " "		7 00

WRENCH GEARS.

No. 1—3/8, 1/2, 5/8 inch Square Nut,	5/8, 3/4 inch Hexagon	each	$0 50
" 2—5/8, 3/4 " "	3/4, 7/8, 1 "	"	60
" 3—3/4, 7/8, 1, 1 1/8 " "	1, 1 1/8, 1 1/4 "	"	75
" 4—1 1/8, 1 1/4, 1 3/8, 1 1/2 " "	1 1/4, 1 1/2, 1 3/4 "	"	1 00

N. B.—In ordering Wrenches, please state what Gears are desired, as a No. 1 Wrench may contain either a Gear for 3/8, 1/2, 5/8 inch Square Nut, or for 5/8 or 3/4 inch Hexagon

* This Handle takes a No 3 Gear.

WROUGHT IRON KEY WRENCH.

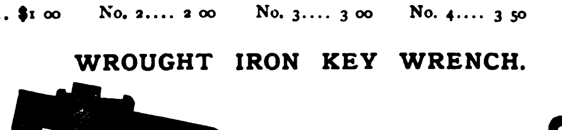


Fig. 747.

Length of Jaw, inch.	2 1/2	3	3 1/2	4	4 1/2	5
Each...	$2 75	3 00	3 45	3 75	5 25	5 75

COLLINS' PATENT SCREW WRENCH.

Size, inch	6	8	10	12	15	18	21
Black	$9 00	10 00	12 00	14 00	23 00	29 00	35 00
Polished	10 00	11 00	14 00	16 00	25 00	31 00	37 00
No. of dozen in Case	6	6	6	6	3	2	1

FOR PIPE WRENCHES, SEE PAGES 82 and 83

RATCHET DRILLS.

PACKER'S RATCHET DRILLS.

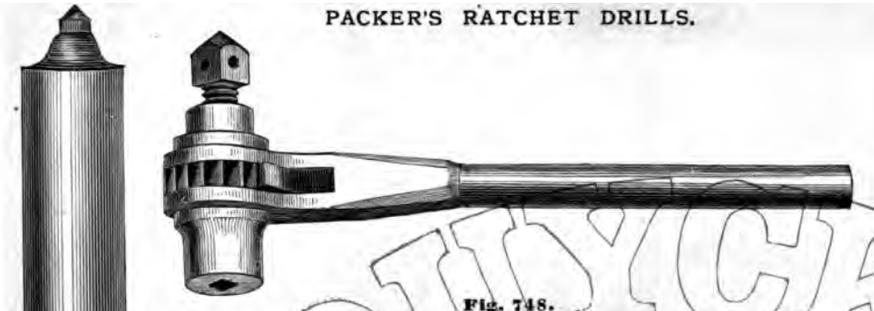


Fig. 748.

BOILER MAKERS' RATCHET DRILLS.—Short Stock.

No. 1—10 inch Handle, each $9 00
" 2—12 " " " 10 50

Fig. 749.

No.	1	2	3	4	5
Length of Handle, in.	10	12	15	17	20
Each	$10 50	13 50	16 00	19 00	23 00

MERRILL'S RATCHET DRILL.

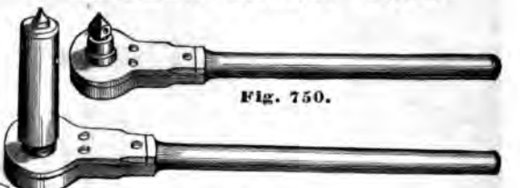


Fig. 750.

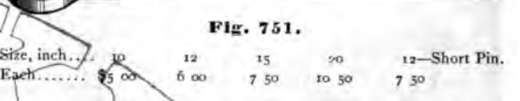


Fig. 751.

Size, inch	10	12	15	20	12—Short Pin.
Each	$5 00	6 00	7 50	10 50	7 50

INGERSOLL'S PATENT RATCHET DRILL.

Fig. 752.

No.	1	2	3
Each	$5 50	7 50	9 00

LOWELL RATCHET DRILL.

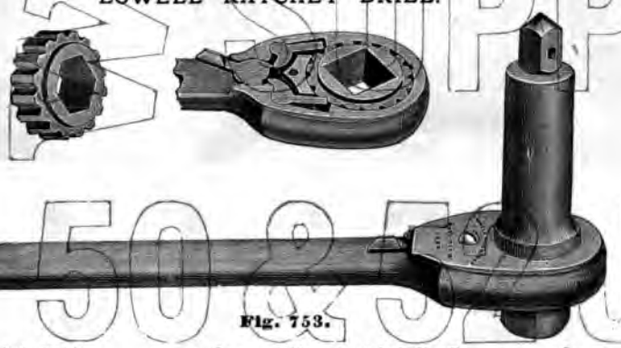


Fig. 753.

No. 1—10 inch Handle $5 00
" 2—12 " 6 50
" 3—15 " 8 00
*No. 3½—18 inch Handle $10 00
" 4 —18 " 10 00
* This Handle takes a No. 3 Gear.

GALLAGHER'S PATENT RATCHET DRILLS.

Fig. 754.

BOILER RATCHETS.

No. 1—10 inch Handle $5 00
" 2—12 " 6 50
No. 3—15 inch Handle $8 00

UNIVERSAL ANGULAR RATCHET DRILL.

No.	1	2	3	4
Each	$10 00	12 00	12 00	13 00

CHAMPION RATCHET DRILL.

No.	1	2	3	4	5	6
Each	$9 25	10 00	10 75	11 50	12 25	13 00

ADJUSTABLE RATCHET.

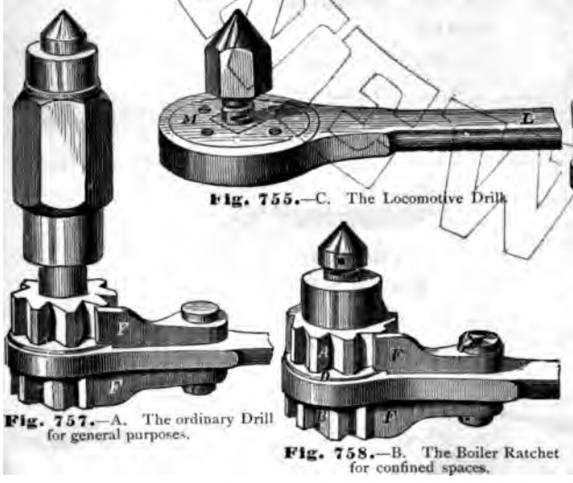


Fig. 755.—C. The Locomotive Drill.

Fig. 757.—A. The ordinary Drill for general purposes.

Fig. 758.—B. The Boiler Ratchet for confined spaces.

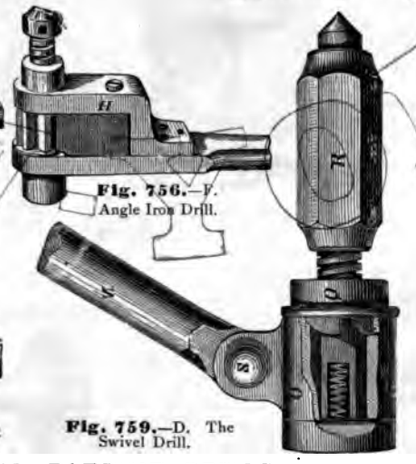


Fig. 756.—F. Angle Iron Drill.

Fig. 759.—D. The Swivel Drill.

Fig. 760.

WESTON'S IMPROVED DIFFERENTIAL RATCHET DRILLS.

Length of Handle, inch	12—A.	14	16	18	20	22	14—B.	14—C	12—D.	12—F.
Each	$8 50	9 00	9 75	11 00	11 75	13 50	9 00	13 50	11 00	21 50

GARSIDE'S PATENT CAST IRON RATCHET DRILL.

Each ..... $3 50 Per dozen..... 40 00 With Steel Wheel, extra, each.... 1 25

Handle works horizontally, perpendicularly, or laterally.

No.	1	2	3
Length of Handle, inch	12	15	18
Each	$13 50	16 00	19 00

SOUTH SIDE SUPPLIES
50 & 52 JOHN ST
NEW YORK

BREAST DRILLS.

Fig. 761.

Small, with Five Drills, from No. 65 to 22 Stub Gauge, per doz.....$24 00

Fig. 762.

No. 1. Double Geared, with 4 Drills.....$4 00
No. 2. Single Geared, with 4 Drills..... 3 00
Extra Drills, per set..... 75

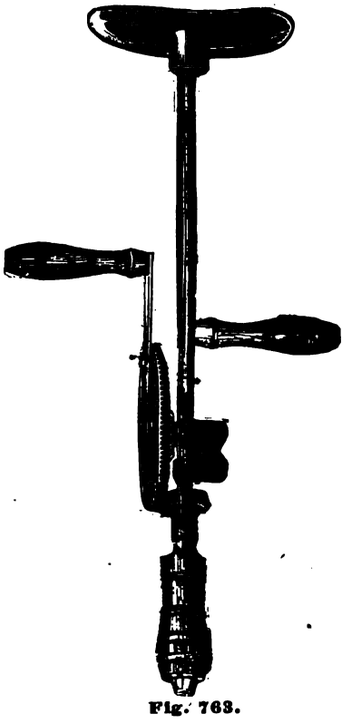


Fig. 763.

Per dozen, not including Drills.....$30 00

Fig. 764.

Each..... $4 00

Fig. 765.

DRILL STOCK AND DRILLS.

Length, inches,	6	7	8	9
Each.....	$0 90	95	1 00	1 25
Length, inches.....	10	11	12	
Each.....	$1 50	2 00	2 25	

CORY'S PATENT UNIVERSAL ANGULAR BIT STOCK.

Fig. 766.

Per dozen $24 00

IMPROVED BIT BRACES.

(Figs. 767 and 769.)

Fig. 767.

No. 0.	14	in. sweep,	per doz.	$33 00
" 1.	12	"	"	30 00
" 2.	10	"	"	27 00
" 3.	8	"	"	24 00
" 4.	6	"	"	21 60
" 10.	14	"	"	33 00
" 11.	12	"	"	30 00
" 12.	10	"	"	27 00
" 13.	8	"	"	24 00
" 14.	6	"	"	21 00
" 15.	4	"	"	20 00

Nos. 0, 1, 2, 3, 4 are solid wrought iron sweep.

Nos. 10, 11, 12, 13, 14, are wrought iron, with Revolving Rosewood Handle.

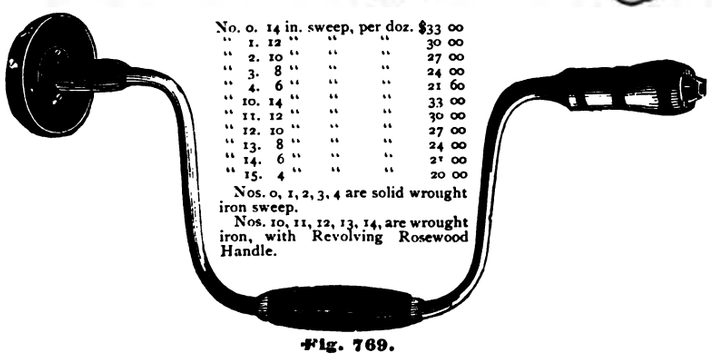


Fig. 769.

STRAIGHT EXTENSIONS.

In three sizes, 18, 21, and 24 inches long; using the same chuck that is on my brace for holding the bit. The shank is like an ordinary bit shank, and fits any brace. The rod is nicely finished, and it is a very handy tool to reach places which could not be reached with the bit alone. Per dozen, $16 00.

Fig. 772.

Fig. 768.

IRON BRACES.

No. 1..... $3 00 No. 2..... $2 50

CHEAP PATENT BRACES.

9 inch sweep, per dozen..... $15 00
11 " " 16 00

Similar to Figure 767, but not finished.

BACKUS' PATENT ANGULAR BORER.

(Fig. 771.)

A, Long Shaft; B, Handle; C, Ball; D, Short Shank; E, Socket; F, Sleeve; G, Jaws; H, Guide; I, Thumb Screw; J, Pin through Ball; K, Screw through Ball; L, Pin through Jaws; M, Screw holding long Shank in Handle.

Per dozen..... ..... $24 00

Fig. 771.

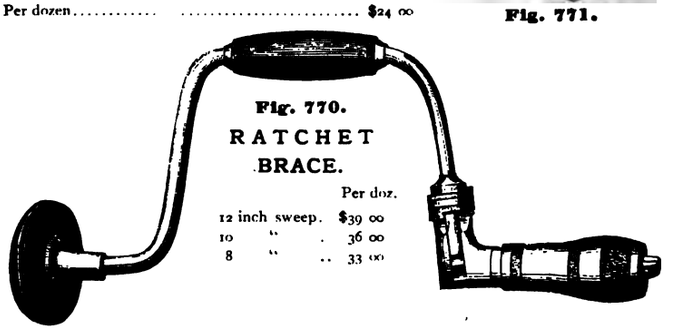


Fig. 770.

RATCHET BRACE.

	Per doz.
12 inch sweep.	$39 00
10 " .	36 00
8 " ..	33 00

COE'S DRILL PRESS AND SCREW CUTTER.

UPRIGHT DOUBLE GEAR.

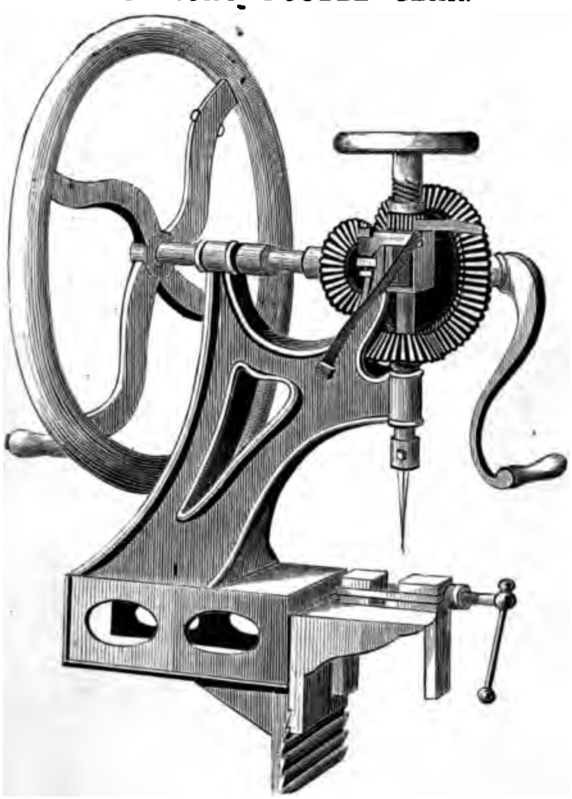


Fig. 773.—No. 2.

The above is a tool capable of any Drilling and Screw Cutting, up to Drilling 2 inch hole, or cutting thread to 3/4 inch.

Each **$50 00**

Also, a Power Drill with Cone Pulleys and Countershaft, Hangers, and Shipper, extra 30 00

Taps and Dies, and Chuck to hold Dies in stock, viz.: 1/4, 5-16, 3/8, 7-16, 1/2, 9-16, 5/8, and 3/4, per pair, extra 4 50

Chuck 3 00

Complete, with Self-feed and Vise.

UPRIGHT DOUBLE GEARED DRILL PRESS.

Fig. 774.—No. 1.

This machine has Self-Feed and Vise, which are adjustable, and will work with or without them, as may be desired.

Each .... $40 00   Less without Vise.... $2 50

COE'S BENCH DRILL.

Fig. 775.

This machine is single-geared. Compact in construction, and desirable for light drilling.

Each **$12 00**

COE'S No. 0.

Fig. 776.—No. 0.

This machine is suitable for carriage and blacksmith work, and ordinary drilling. It is of the same construction as Nos. 2 and 1, with the exception of feed and vise.

Weight, 100 lbs.

Each..... . **$28 00**

PATENT TWIST DRILL BITS.

Made expressly for Coe's Drill Press, and will fit any of the machines.

1/8 inch	$0 90	7-16 inch	$1 15	3/4 inch	$1 90
3-16 "	1 05	1/2 "	1 25	13-16 "	2 10
1/4 "	1 05	9-16 "	1 35	7/8 "	2 35
5-16 "	1 10	5/8 "	1 50	1 "	3 00
3/8 "	1 10	11-16 "	1 62		

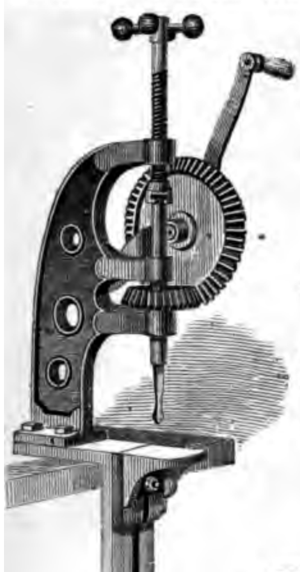


Fig. 777.

WHITON'S HAND DRILL.

Designed for use in shops without power.

The platform underneath the drill can be lowered six inches, or removed entirely.

Each $12 00

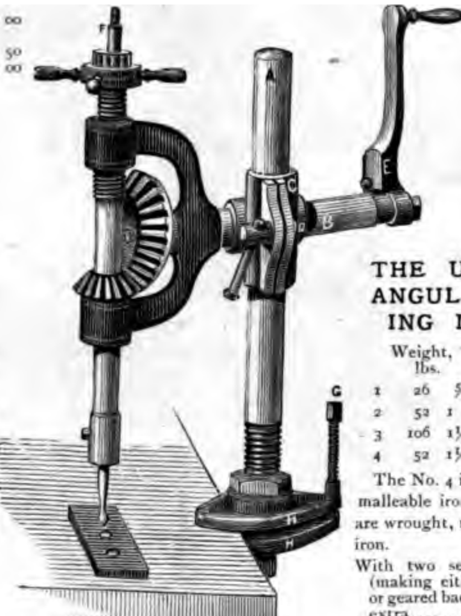


Fig. 778.

THE UNIVERSAL ANGULAR DRILLING MACHINE.

	Weight, lbs.	Drills up to	
1	26	5/8 in. hole.	$34 00
2	52	1 "	38 00
3	106	1 1/2 "	65 00
4	52	1 1/2 "	58 00

The No. 4 is made of steel and malleable iron; Nos. 1, 2, and 3 are wrought, malleable, and gray iron.

With two sets of Gears (making either speeded or geared back machine), extra $2 00

Self-Feed, extra 6 00

HAND DRILL.

PORTABLE.

With Drills of the following sizes:

1/8, 1/4, 3/8, 1/2, 5/8, 3/4, 7/8, and 1 inch.

Each $25 00

Fig. 779.

HORIZONTAL DRILLS.

Fig. 780.

No. 4. With Feed, $7 00; without Feed $6 00
Common Blacksmith Drill, each 5 00

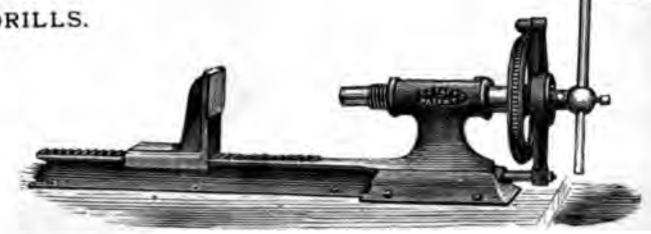


Fig. 781.

No. 2. Self-Feeding, $10 00; with Balance Wheel $13 00
" 5. " 17 00; " " 20 00

WORCESTER UPRIGHT SELF-FEEDING DRILLS.

Fig. 782.—No. 0.

Drills from 1-16 to 3/8 inch hole. Length, 26 inches. Weight, 30 lbs.

The above is fitted for a No. 2 Beach Chuck, or can be used without.

Each..... $30 00

The Chuck would be extra.

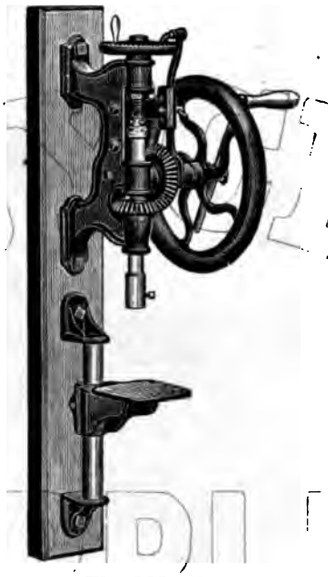


Fig. 783.—No. 1.

Drills from 1/8 to 3/4 inch hole. Length, 42 inches. Weight, 95 lbs.

Each, with Balance Wheel..... $28 00
" without " " 25 00

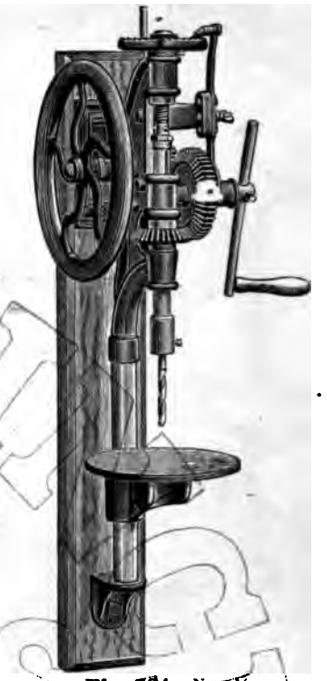


Fig. 784.—No. 1½.

Drills from 1/8 to 1 inch hole. Length, 4 inches. Weight, 120 lbs.

Each..... $38 00

Fig. 785.—No. 2.

Drills from 1/8 to 1¼ inch hole. Length, 54 inches. Weight, 160 lbs.

Each..... $48 00

THE MORSE DRILL.

MADE TO FIT THESE MACHINES.

1/4 inch.....	$ 65	25-32 inch....	$2 60
9-32 "	70	13-16 "	2 80
5-16 "	75	27-32 "	3 00
11-32 "	80	7/8 "	3 20
3/8 "	85	29-32 "	3 40
13-32 "	90	15-16 "	3 60
7-16 "	1 00	31-32 "	3 80
15-32 "	1 10	1 "	4 00
1/2 "	1 20	1 1-32 "	4 20
17-32 "	1 30	1 1-16 "	4 40
9-16 "	1 40	1 3-32 "	4 60
19-32 "	1 50	1 1/8 "	4 80
5/8 "	1 65	1 5-32 "	5 00
21-32 "	1 80	1 3-16 "	5 25
11-16 "	2 00	1 7-32 "	5 50
23-32 "	2 20	1 1/4 "	5 75
3/4 "	2 40		

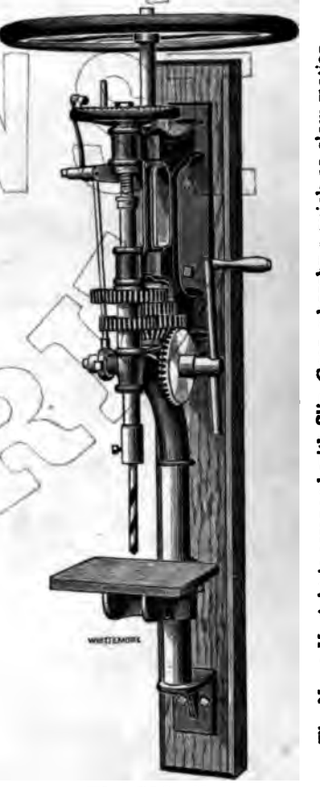


Fig. 786.—No. 3.

The No. 3 Upright is arranged with Slip Gear, whereby a quick or slow motion may be given the Drill (as desired), for light and heavy work.

Drills from 1/4 to 1½ inch hole. Weight, 250 lbs.

Each..... $75 00

POWER DRILLS.

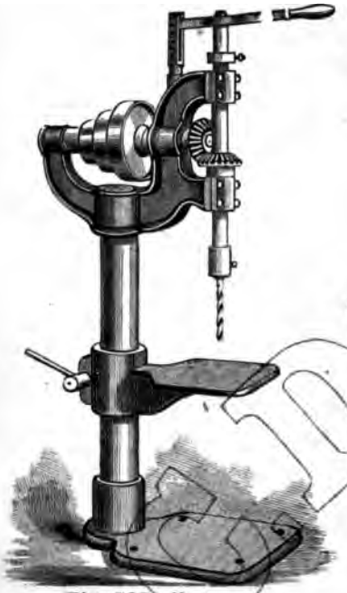


Fig. 787.—No. 0.

Fig. 788.—No. 4.

Fig. 789.—No. 5.

(No. 0.)

Made to stand on bench. Convenient for light drilling.

Swings 12 inches. Weight, 100 lbs.

Including Countershaft $60 00

(No. 4.)

Swings 18 inches. Weight, 460 lbs.

With Lever Feed..... $125 00

" Wheel " 130 00

(No. 5.)

Swings 20 inches. Weight, 650 lbs.

With Lever Feed..... $175 00

Wheel Feed, with quick return motion, extra..... 15 00

For larger sizes and Radial Drills, prices on application.

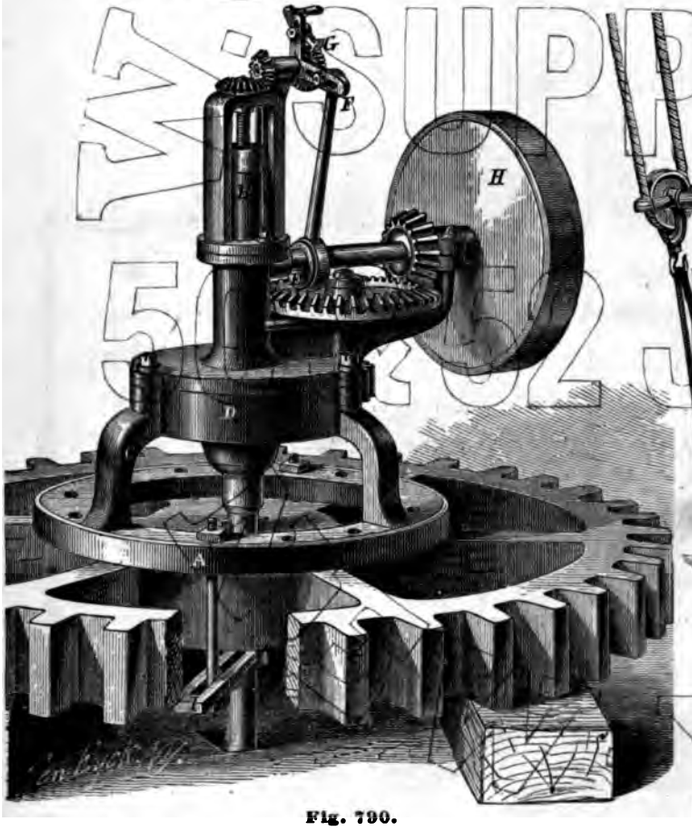


Fig. 790.

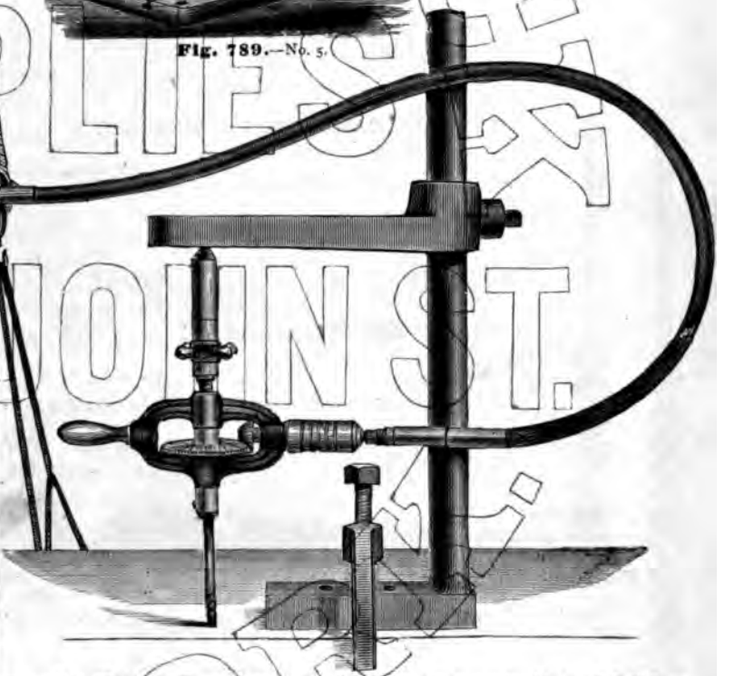


Fig. 791.—This cut represents Shaft as used in drilling metals with A or B Drill Press.

PATENT PORTABLE BORING MACHINE.

The above engraving fully explains itself. The Base Plate, or Ring A, is three feet in diameter, turned top, bottom and edge true with the Spindle or Boring Bar B, and has the legs C and Box D cast on it to support the other parts of the machine, thereby making it very convenient to set true on the work to be done. The machine weighs about one thousand pounds, will bore a hole from 3½ up to 18 inches in diameter, and 24 inches deep, doing about double the work of a horizontal machine. The machine is strong and well finished in every respect, having square threaded feed screw and heavy brass nut, is self-feeding both up and down, and is furnished with Steady Bar, I, and one Pulley 30 inches diameter, 5 inches face.

Each..... ..... $280 00

UNIVERSAL AND PORTABLE DRILL,

OPERATED BY THE STOW PATENT FLEXIBLE SHAFT.

A—Drill Press, drills ⅜ to 2 inch holes in metals, used with No. 6, 7, or 8 Shaft..... ... $25 00

B— " " ⅛ to 1 " " " " 4 or 5 " ..... 20 00.

C— " " 1-16 to ⅜ " " " " 3 " 5 00

Auger Chucks (will receive square shanked Bit or Auger, used with No. 2, 3, 4, or 5 Shaft) 3 00

For other classes of augers we furnish special appliances.

									Per ft., extra.
No. 0—*¼	inches in diameter,	3	feet long,	Flexible Shaft, complete.....				$22 00	$1 80
" 2— ⅜	"	"	4	"	"	"	"	..... 35 00	2 40
" 3— ½	"	"	5	"	"	"	"	..... 40 00	3 00
" 4— ⅝	"	"	6	"	"	"	"	..... 50 00	3 75
" 6—1	"	"	8	"	"	"	"	..... 90 00	5 25
" 8—1¼	"	"	8	"	"	"	"	..... 135 00	8 25

*Diameter of the revolving shaft, *not* the sleeve.

W. DUYCKINCK & SUPPLIES
52 JOHN ST.
NEW YORK

RICE'S PATENT ANGLE BORING MACHINES.

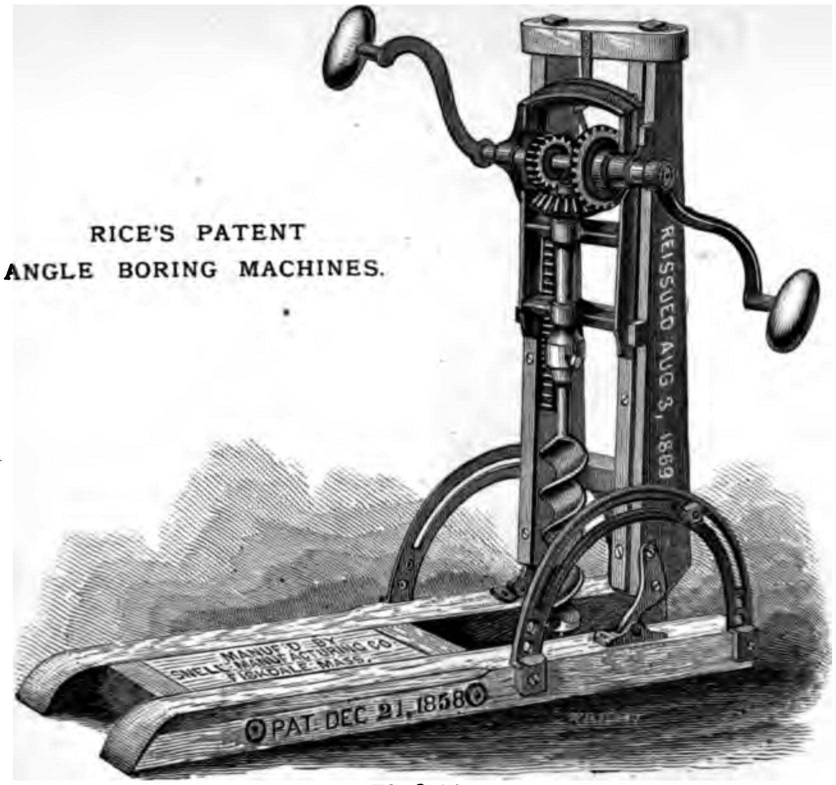


Fig. 792.

Wood Top Angle	each,	$6 25
Regular Machine	"	4 75
With Polished Gears and extra finish (additional)	"	1 75

Snell's and Phenix Augers fitted to the machines, and furnished without extra charge for fitting.

Boring Machines, when packed in cases of two and four in each case, will be charged for at 50 and 75 cents per case.

PHILLIPS' SELF-WITHDRAWING BORING MACHINES.

Fig. 793.

Complete, with Snell's Augers in sets of 18 quarters $10 00

SNELL'S CAST STEEL CAR BITS.

(Fig. 794.)

Sixteenths	4	5	6	7	8	9	10	
9 inch Twist, per dozen	$4 00	4 00	4 68	5 46	6 24	7 02	7 80	
Sixteenths	11	12	13	14	15	16	17	
9 inch Twist, per dozen	8 58	8 64	9 36	10 08	10 80	11 52	12 24	
9 inch Twist, in sets of 32½ quarters, per dozen							8 40	
Sixteenths	4	5	6	7	8	9	10	11
12 inch Twist, per doz	$4 20	4 20	5 04	5 88	6 72	7 56	8 40	9 24
Sixteenths	12	13	14	15	16	17		
12 inch Twist, per dozen	$9 36	10 14	10 92	11 70	12 48	13 26		
12 inch Twist, in sets of 32½ quarters, per dozen						9 10		

SNELL'S BORING MACHINE AUGERS.

(Fig. 796.)

Size, inch	1	1¼	1½	1¾	2
Per dozen	$10 00	12 00	14 00	17 00	19 00
In sets, 18 quarters, per set					3 50

SNELL'S EXTRA CAST STEEL AUGER BITS.

(Fig. 795.)

Sixteenths	3	4	5	6	7	8	9	10	11
Per dozen	$3 50	3 00	3 00	3 25	3 25	3 50	3 50	4 00	4 25
Sixteenths	12	13	14	15	16	18	20	22	24
Per dozen	$4 50	4 75	5 00	5 50	6 00	8 00	9 00	9 90	10 80
In sets of 24 quarters, per dozen									3 50
" " 32½ " "									4 50
Snell's Handled Auger Bits, assorted, 4 to 8 sixteenths, per dozen									3 00

SNELL'S SOLID CAST STEEL AUGERS.

(Fig. 797.)

Size, inch,	½	⅝	¾	⅞	1	1⅛	1¼	1½	1¾	2
Per dozen,	$5 00	6 00	7 50	8 00	8 50	10 00	10 00	12 00	14 00	17 00

Size, inch,	2¼	2½	2¾	3	3¼	3½	4
Per dozen,	$20 00	25 00	30 00	36 00	40 00	45 00	60 00

Fig. 794.

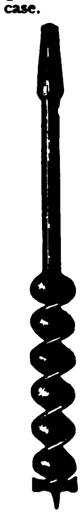


Fig. 795.

Fig. 796.

Fig. 797.

LEWIS' PATENT SINGLE TWIST MACHINE AUGER BIT.

FOR BORING WITH OR ACROSS THE GRAIN.

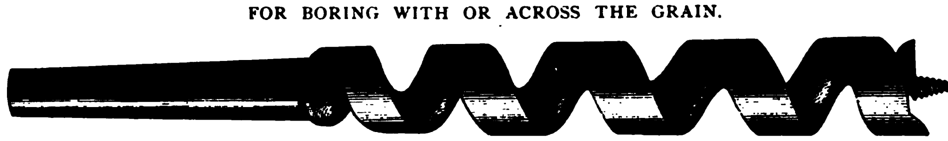


Fig. 798.

Under 9 inch length of Twist, for each ¼ inch of diameter	$0 30
9 to 12 " " " ¼ " "	40
12 to 15 inch length of Twist, for each ¼ inch of diameter	$0 50
15 to 18 " " " ¼ " "	55

EXTRA HEAVY DOUBLE TWIST MACHINE AUGER BIT.

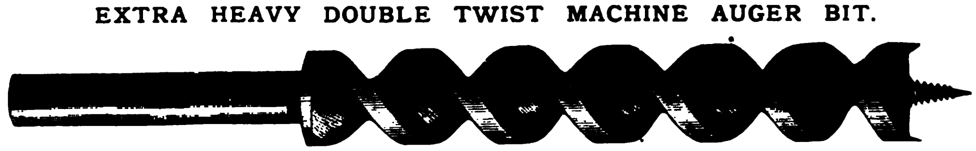


Fig. 799.

Under 9 inch length of Twist, for each ¼ inch of diameter	$0 25
9 to 12 " " " ¼ " "	33⅓
12 to 15 inch length of Twist, for each ¼ inch of diameter	$0 40
15 to 18 " " " ¼ " "	50

EXTRAS.

Turning Straight Shanks not over 2½ inches long, per dozen	$1 25
Turning Taper Shanks not over 2½ inches long, per dozen	$1 75

All orders for less than 12 Bits of one size charged 5 cents per quarter extra.

CLARK'S PATENT EXPANSION BITS.

Fig. 800.

Small with 2 Cutters, ½ to ⅞ and ⅞ to 1½ in., per doz.	$18 00
Extra Cutters for No. 1, ½ to ⅞ inch, each	35
" " " 2, ⅞ to 1½ " "	40
Large size, with 2 cutters, ⅞ to 1¾ and 1¾ to 3 inches, per dozen	26 00

MORSE PATENT STRAIGHT LIP INCREASE TWIST DRILL.

TURNED DRILLS.

TAPER OR STRAIGHT SHANKS.

Patent Increase Twist and American Standard Drills.

No. of Socket for Standard Taper.	Diameter of Drills, ins.	Length, inch.	Each.	No. of Socket for Morse Taper.
No. 1, $1 35	1/4	6 1/8	$0 65	
	9/64	6 1/4	70	
	5/32	6 3/8	75	
	11/64	6 1/2	80	
	3/8	6 3/4	85	
	13/64	7	90	
	7/32	7 1/4	95	
	15/64	7 1/2	1 00	
	1/2	7 3/4	1 10	
	17/64	8	1 20	
No. 3 Socket, $2 10	9/32	8 1/4	1 30	
" 2 " 1 65	19/64	8 1/2	1 40	
	5/8	8 3/4	1 50	
	21/64	9	1 65	
	11/32	9 1/4	1 80	
	23/64	9 1/2	1 95	
	3/4	9 3/4	2 10	
	25/64	9 7/8	2 25	
	13/32	10	2 40	
	27/64	10 1/4	2 55	
	7/8	10 1/2	2 70	
	29/64	10 5/8	2 85	
	15/32	10 3/4	3 00	
	31/64	10 7/8	3 20	
No. 4 Socket, $2 65	1	11	3 40	
	1 1/32	11 1/8	3 60	
	1 1/16	11 1/4	3 80	
	1 3/32	11 1/2	4 00	
	1 1/8	11 3/4	4 20	
	1 5/32	11 7/8	4 40	
	1 3/16	12	4 60	
	1 7/32	12 1/8	4 80	
	1 1/4	12 1/2	5 00	
	1 9/32	14 1/8	5 20	
	1 5/16	14 1/4	5 40	
	1 11/32	14 3/8	5 60	
	1 3/8	14 1/2	5 80	
	1 13/32	14 5/8	6 00	
	1 7/16	14 3/4	6 25	
	1 15/32	14 7/8	6 50	
	1 1/2	15	6 75	
No. 5 Socket, $4 00	1 17/32	15 1/8	7 75	
	1 9/16	15 1/4	8 00	
	1 19/32	15 3/8	8 25	
	1 5/8	15 1/2	8 50	
	1 21/32	15 5/8	8 75	
	1 11/16	15 3/4	9 00	
	1 23/32	15 7/8	9 25	
	1 3/4	16	9 50	
	1 25/32	16 1/8	9 75	
	1 13/16	16 1/4	10 00	
	1 27/32	16 3/8	10 25	
	1 7/8	16 1/2	10 50	
	1 29/32	16 1/2	10 70	
	1 15/16	16 1/2	10 80	
	1 31/32	16 1/2	10 90	
	2	16 1/2	11 00	

No. 1, $1 30 — No. 2, $2 00 — No. 3, $2 75 — No. 4, $4 00

Fig. 802.

Fig. 801.

The above we make by 64ths, if ordered.

STRAIGHT SHANKS.

Diameter of Drills, ins.	Length, inch.	Per dozen.	Each.
1/16	2 1/2	$1 10	$0 10
5/64	2 5/8	1 20	11
3/32	2 3/4	1 30	12
7/64	2 7/8	1 50	14
1/8	3	1 65	15
9/64	3 1/8	1 85	17
5/32	3 1/4	2 00	18
11/64	3 3/8	2 25	20
3/16	3 1/2	2 50	21
13/64	3 5/8	2 75	24
7/32	3 3/4	3 00	27
15/64	3 7/8	3 25	30
1/4	4	3 50	32
17/64	4 1/8	3 75	34
9/32	4 1/4	4 00	36
19/64	4 3/8	4 25	38
5/16	4 1/2	4 50	40
21/64	4 5/8	4 80	43
11/32	4 3/4	5 20	46
23/64	4 7/8	5 60	50
3/8	5	6 00	53
25/64	5 1/8	6 40	56
13/32	5 1/4	6 80	59
27/64	5 3/8	7 20	63
7/16	5 1/2	7 60	66
29/64	5 5/8	8 00	70
15/32	5 3/4	8 40	74
31/64	5 7/8	8 70	77
1/2	6	9 00	80

The above comprises the Jobber's and Machinist's Sets.

For very exact work, a gauge, plainly marked, should accompany an order.

Drills of taper length, with 1/2 inch Straight Shank, same price as Turned Drills.

STUBS' STEEL WIRE GAUGE.

STRAIGHT SHANKS.

Numbers by Gauge.	Length, inch.	Per dozen.	Each.
1 to 5	4	$2 35	$0 22
6 to 10	3 11/16	2 25	21
11 to 15	3 1/2	2 15	20
16 to 20	3 1/4	2 00	19
21 to 25	3 1/16	1 85	18
26 to 30	2 13/16	1 70	16
31 to 35	2 5/8	1 50	15
36 to 40	2 7/16	1 30	13
41 to 45	2 1/4	1 20	12
46 to 50	2 1/16	1 10	11
51 to 65	1 3/4	1 10	10

BIT STOCK DRILLS.

(Fig. 801.)

Diameter of Drills.	Per dozen.	Each.
1/16	$1 60	$0 15
3/32	1 75	17
1/8	2 25	22
5/32	2 75	26
3/16	3 25	30
7/32	3 75	35
1/4	4 50	40
9/32	5 25	45
5/16	6 00	55
11/32	7 00	60
3/8	8 00	68
13/32	9 00	78
7/16	10 00	85
15/32	11 00	93
1/2	12 00	1 00

Per set, 1-16 to 1/4 by 32d, 1/4 to 3/8 by 16th, boxed, $2 80

To prevent confusion in filling orders, parties ordering will please state which taper is desired.

Straight Shank Drills, Taper lengths, at Taper Shank prices.

The Standard Taper corresponds with the Manhattan Taper.

Drills of any size or length, with Straight or Taper Shanks, made to order, and to fit any socket desired.

The Patent Grinding Line is applied to Patent Increase Twist Drills only. Parties ordering will please state whether they would have the Grinding Line applied or not.

DRILLS.

PER SET.

	Patent Increase Twist Drill.	Amer. Standard Taper Drill Sockets.
No. 1—Set of Taper Shank Drills, ¼ to 1 inch, varying by 16ths	$22 00	
" 2— " " " ⅜ to 1¼ " " 16ths	38 50	
" 3— " " " ⅜ to ¾ " " 32ds, ¾ to 1¼ inch, varying by 16ths	46 50	
" 4— " " " ⅜ to ¾ " " 32ds, ¾ to 2 " " 16ths	148 00	
" 5— " Drills, Straight Shanks, 1/16 to ½ inch, mounted, varying by 64ths	11 00	
" 6— " " " " 1/16 to ½ " " " 32ds	5 75	
" 7— " " 60 to ⅜ inch, mounted	10 40	
" 8— " " Steel Wire Gauge, 1 to 60, mounted	8 50	
" 9—Half Set of Drills, Steel Wire Gauge, alternate numbers, 1 to 60, mounted	4 50	
" 10—Jeweler's Set of Drills, neatly mounted in a Mahogany Case, with Cap, containing 36 Drills, from No. 30 (⅛ inch) to No. 65, Steel Wire Gauge	4 75	
" 11—Set of Taper Shank Drills, ⅜ to 2 inch, varying by 32ds	270 00	
" Steel Sockets, to hold Drills from ¼ to 1¼ inch	6 00	$7 75
One Large Steel Socket, to hold Drills from 1 5/16 to 2 inch	4 00	4 00

REAMERS.

Fig. 803.

JOBBER'S SET. / SHORT SET.

Jobber's: Diam. of Reamer, inch.	Full Length, inch.	Length of Flute, inch.	Each.	Short: Diam. of Reamer, inch.	Full Length, inch.	Length of Flute, inch.	Each.
¼	4	2	$1 40	¼	3¾	2¼	$1 35
5/16	4½	2¼	1 55	5/16	4	2¼	1 45
⅜	5	2½	1 70	⅜	4¼	2¼	1 60
7/16	5½	2¾	1 85	7/16	4½	2 5/16	1 70
½	6	3	2 00	½	4¾	2 7/16	1 80
9/16	6½	3¼	2 20	9/16	5	2 9/16	1 95
⅝	7	3½	2 40	⅝	5¼	2⅝	2 10
11/16	7 11/16	3 11/16	2 60	11/16	5½	2¾	2 25
¾	8⅜	4 3/16	2 90	¾	5¾	2 13/16	2 40
13/16	9 1/16	4½	3 20	13/16	6	3 1/16	2 60
⅞	9 11/16	4 13/16	3 50	⅞	6⅜	3 3/16	2 80
15/16	10¼	5⅛	3 80	15/16	6¾	3 5/16	3 00
1	10⅞	5 7/16	4 10	1	7⅛	3 9/16	3 20
1 1/16	11¼	5⅝	4 50	1 1/16	7½	3¾	3 40
1⅛	11⅝	5 13/16	4 90	1⅛	7⅞	4	3 60
1 3/16	12	6	5 30	1 3/16	8¼	4¼	3 90
1¼	12¼	6⅛	5 70	1¼	8¾	4½	4 20
1 5/16	12 7/16	6 3/16	6 10	1 5/16	9	4¾	4 50
1⅜	12⅝	6 5/16	6 50	1⅜	9½	5	4 90
1 7/16	12 13/16	6⅜	7 00	1 7/16	9¾	5¼	5 40
1½	13	6½	7 50	1½	10	5½	5 90
1 9/16	13	6½	8 00	1 9/16	10¼	5½	6 50
1⅝	13	6½	8 50	1⅝	10⅝	5⅝	7 00
1 11/16	13½	6¾	9 00	1 11/16	10¾	5⅝	7 50
1¾	13½	6¾	9 50	1¾	11	5¾	8 00
1 13/16	13½	6¾	10 00	1 13/16	11¼	5¾	8 50
1⅞	14	7	10 50	1⅞	11½	5⅞	9 25
1 15/16	14	7	11 25	1 15/16	11¾	5⅞	10 00
2	14	7	12 00	2	12	6	10 75

Per Short Set, ¼ to 1 inch	$28 00
" " " ¼ to 1¼ "	43 00
" " " ¼ to 1½ "	64 00
" Jobber's Set, ¼ to 1 inch	33 00
" " " ¼ to 1¼ "	53 00
" " " ¼ to 1½ "	80 00
Walnut Case for Set ¼ to 1 inch	3 75
" " " ¼ to 1¼ "	4 25
" " " ¼ to 1½ "	4 50

Solid or Shell Reamers of any size or length, made to order.

Fig. 804.

CHUCK REAMERS.

Diam. of Reamer, inch.	Full Length, inch.	Length of Flute, inch.	Each.
Less .005			
¼	6	⅞	$0 90
5/16	6	⅞	1 00
⅜	7	1	1 10
7/16	7	1	1 20
½	8	1⅛	1 30
9/16	8	1⅛	1 45
⅝	9	1¼	1 60
11/16	9	1¼	1 75
¾	9½	1⅜	1 90
13/16	9½	1⅜	2 05
⅞	10	1½	2 20
15/16	10	1½	2 35
1	10½	1⅝	2 50
1 1/16	10½	1⅝	2 65
1⅛	11	1¾	2 80
1 3/16	11	1¾	2 95
1¼	11½	1⅞	3 10
1 5/16	11½	1⅞	3 25
1⅜	12	2	3 40
1 7/16	12	2	3 60
1½	12½	2⅛	3 80
1 9/16	12½	2⅛	4 00
1⅝	13	2¼	4 20
1 11/16	13	2¼	4 40
1¾	13½	2⅜	4 60
1 13/16	13½	2⅜	4 85
1⅞	14	2½	5 10
1 15/16	14	2½	5 35
2	14	2½	5 60

The above Reamers are finished 1/200 of an inch smaller than Whitworth's Standard Gauges.

Fig. 805.

SHELL REAMERS.

Diam. of Reamer, inch.	Length, inch.	Size of Hole, inch.	Each.
¾	2½	½	$1 60
13/16	2½	½	1 60
⅞	2½	½	1 70
15/16	2½	½	1 70
1	2¾	⅝	1 80
1 1/16	2¾	⅝	1 80
1⅛	2¾	⅝	1 90
1 3/16	2¾	⅝	2 00
1¼	2¾	⅝	2 20
1 5/16	3	¾	2 40
1⅜	3	¾	2 60
1 7/16	3	¾	2 80
1½	3	¾	3 10
1 9/16	3	¾	3 40
1⅝	3	¾	3 70
1 11/16	3½	1	4 10
1¾	3½	1	4 50
1 13/16	3½	1	4 90
1⅞	3½	1	5 30
1 15/16	3½	1	5 80
2	3½	1	6 30
2 1/16	3¾	1¼	6 80
2⅛	3¾	1¼	7 30
2 3/16	3¾	1¼	7 70
2¼	3¾	1¼	8 10
2 5/16	3¾	1¼	8 50
2⅜	3¾	1¼	8 75
2 7/16	3¾	1¼	9 00
2½	3¾	1¼	9 25

CRITCHLEY'S PATENT EXPANDING REAMER.

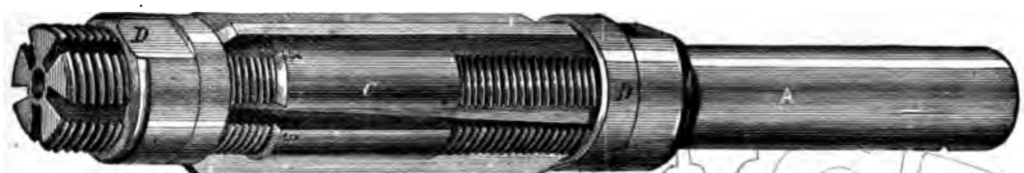


Fig. 806.

No.	Begins at, inch.	Expands to, inch.	Length of Cutter, in.	Full Length, inch.	Each.
1	3/4	27/32	2 5/8	7	$7 50
2	27/32	31/32	2 3/4	7 1/2	7 75
3	31/32	1 1/8	3	9	8 25
4	1 1/8	1 9/32	3 1/4	11	9 25
5	1 9/32	1 15/32	4	12	10 50
6	1 15/32	1 11/16	4	12	12 00
7	1 11/16	1 15/16	4 1/4	14	13 75
8	1 15/16	2 1/4	4 3/4	17	16 00
9	2 1/4	2 5/8	5 1/4	18	18 50
10	2 5/8	3 1/16	6 1/4	20	21 50
11	3 1/16	3 9/16	7	23	25 20
12	3 9/16	4 1/8	7 3/4	24	29 00

Whole Set.......................... .... $175 00

The above is a tool that supplies a want in every machine shop. For a repair shop where there are so many different sized holes, it will prove indispensable in saving a great deal of time and vexation in making fits where the holes are a little small, and no ready facilities for making them larger.

The body, A, has five grooves fitted with cutters, B ; a screw thread is cut on the body of the tool, and a portion of it is left in the centre, as at C, to strengthen and prevent springing ; the cutters, B, are beveled at each end, and confined in their places by nuts D, so that it is only necessary to slacken them off and slide the cutters up or down in the tapered grooves to expand or contract their outside diameters, and thus adapt them to all kinds of work.

LeCOUNT'S PATENT EXPANDING MANDREL, or ARBOR.

(Fig. 807.)

No. 1—Takes any hole inclusive between 1/2 and 1 inch........................ $10 00
" 2— " " " " 1 and 1 1/2 " 14 00
" 3— " " " " 1 1/2 and 2 " 18 00
" 4— " " " " 2 and 3 " 32 00
" 5— " " " " 3 and 4 " 48 00
Full Set.. 122 00

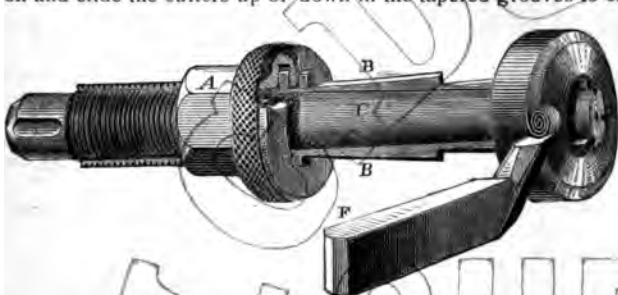


Fig. 807.

Explanation of Cut.—C is the steel mandrel ; B B are two of the three keys that are drawn up and pushed down in a dovetailed groove, rising from the point, by the nut. A groove is turned inside the nut A, which catches the head of the key B, and thus draws them up to tighten the work. This, like any mandrel, requires a true hole to make a true job. Very heavy cuts, on large diameters, can be done on it without slipping. F represents the tool in operation.

WHITON'S PATENT CENTRING MACHINES.

(Figs. 808, 809, and 810.)

Fig. 808.—No. 1.

Centres all sizes round iron, from 1/4 to 3 1/4 inch diameter.................... $50 00
Countershaft, extra.................... 9 00

Fig. 809.—No. 2.

Centres all sizes round iron, from 1/4 to 4 1/2 inch diameter.................... $68 00
Countershaft, extra.................... 9 00

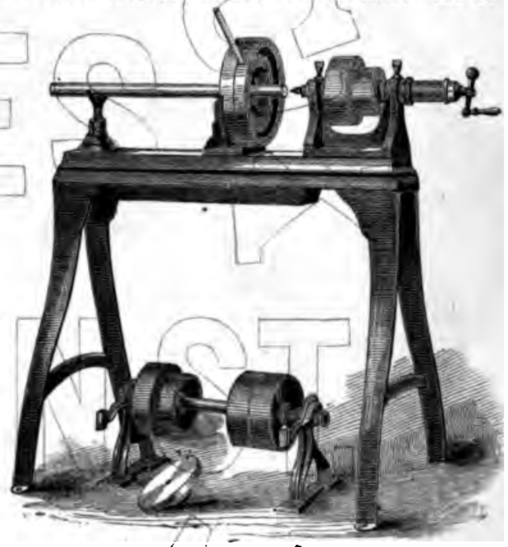


Fig. 810.—No. 3.

Centres all sizes round iron, from 1/4 to 5 1/2 inch diameter, including Countershaft.. $100 00

IMPROVED CENTRING ATTACHMENT.

Fig. 811.

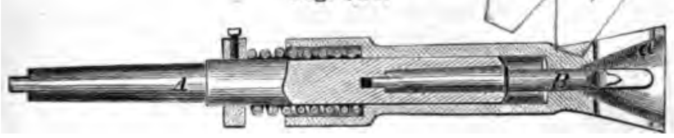


Fig. 812.

Description.—A. in the cut, represents the drill socket, arranged in the revolving spindle of a lathe, in the ordinary manner. B is the bit secured in the drill socket, A. Upon the drill socket is loosely fitted a slide sleeve, C, which has a funnel-shaped inner end, *a*, that embraces the end of the bit, as is clearly shown in Fig. 812. The sleeve, C, can slide on the drill socket. A spring, D, bearing against the outer end of the sleeve, holds it forward on the spindle, by acting on an adjustable collar of the drill socket.

It will centre iron from 1/4 to 1 1/4 inch diameter.

Each.. $6 50

GARDINERS' CENTRING AND SQUARING ATTACHMENT FOR LATHES.

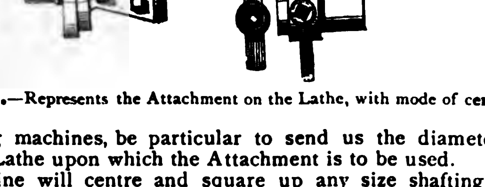


Fig. 813.—Represents the Attachment on the Lathe, with mode of centring Shafts.

In ordering machines, be particular to send us the diameter of the Dead Spindle of the Lathe upon which the Attachment is to be used.

This machine will centre and square up any size shafting, from 5/8 to 2 1/4 inches in diameter. The length it will centre varies according to the length of the lathe bed upon which the Attachment is used. For a steady rest, make a common fork of tool steel, split at one end 2 1/2 inches, and spread about 1 7/8 inches ; place in the tool post of Lathe the same as a turning tool.

Centring Attachment, complete.. $35 00
Boxing, extra.. 25

DRILL CHUCKS.

ADJUSTABLE DRILL CHUCK.

Fig. 814.

Holds $\frac{1}{16}$ to $\frac{5}{8}$ inches.....$6 00

CENTRE DRILL CHUCK.

Each.....$2 50

PLUG ARBOR FOR DRILL CHUCKS.

Each.....$1 00

Fig. 815.

BEACH PATENT DRILL CHUCK.

Fig. 816.

No. 0 holds from 0 to $\frac{1}{8}$ inch diameter (for Jewelers).....$8 00
" 1 " " 0 " $\frac{1}{4}$ " " 6 00
" 2 " " 0 " $\frac{3}{8}$ " " 3 50
" 3 " " $\frac{1}{16}$ " $\frac{1}{2}$ " " 10 00
" 4 " " $\frac{3}{16}$ " $\frac{5}{8}$ " " 11 00

ALMOND CHUCK.

Fig. 817.

Holds Drills $\frac{5}{16}$ and under, each, $5 00

DRILL CHUCK.

Fig. 818.

2 inches diameter, takes drills to ½ inch, all the working parts are steel.....$7 50
Extra Sets of Jaws..... 2 00

GEARED DRILL CHUCK.

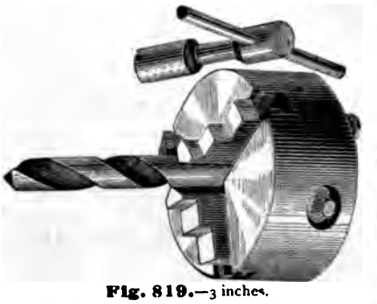


Fig. 819.—3 inches.

Each.....$10 00

Self-Centring Little Giant Drill Chuck.

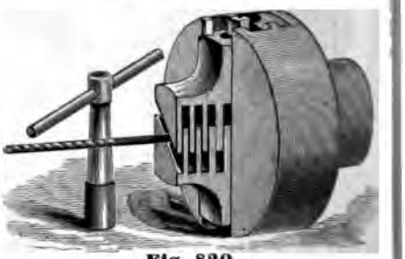


Fig. 820.

No. 1 Holds from 0 to ½ inch.....$9 00
" 2 " " 0 " 1 " 10 00

KEY DRILL CHUCK.

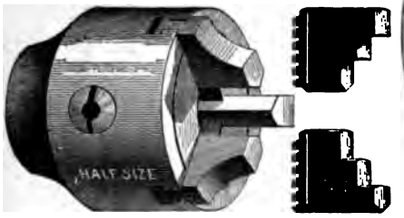


Fig. 821.

Holds drills $\frac{1}{64}$ to $\frac{5}{16}$ inch, each.....$8 00
With 2 sets Jaws, $10 00

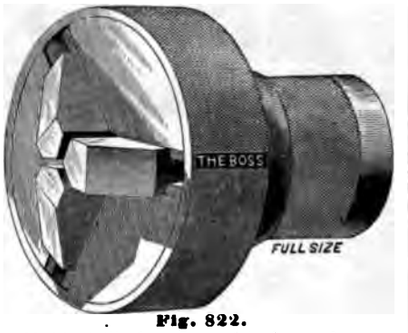


Fig. 822.

Holds drills from 0 to $\frac{3}{8}$ inch.....$6 50

VICTOR CHUCK.

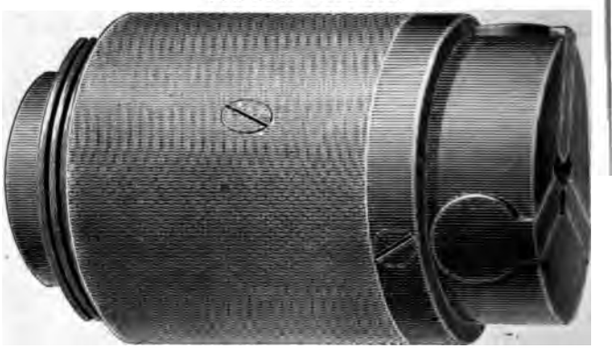


Fig. 823.

Holds from 0 to $\frac{3}{8}$.....$8 50

DANBURY CHUCK.

Fig. 824.

Each.....$8 50

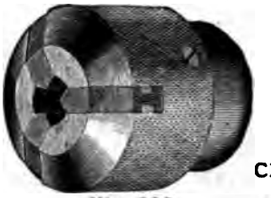


Fig. 825.

CENTENNIAL DRILL CHUCK.

(Fig. 825.)

Hold drills from $\frac{1}{64}$ to ½ inches.....$4 25

CENTRE DRILL CHUCK.

Fig. 826.

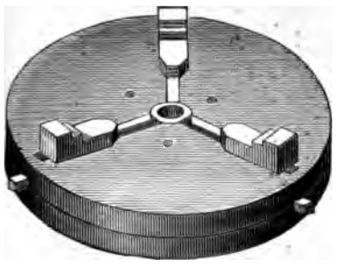
Each.....$2 50

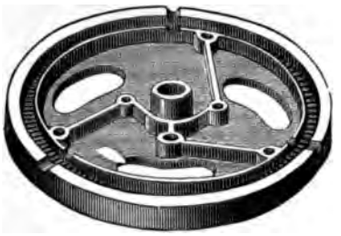
GEARED DRILL CHUCK.

Fig. 827.—2 inches.

Holds drills to ½ inch.....$7 50

THE HORTON LATHE CHUCK.





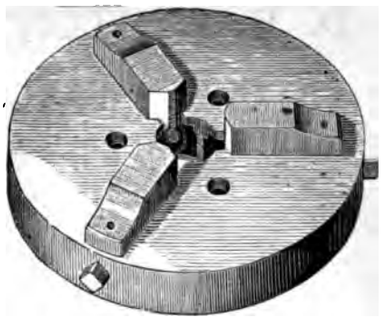
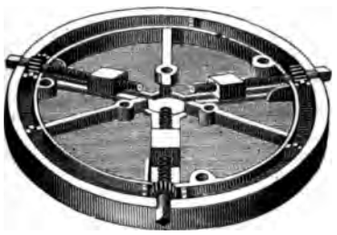


Fig. 829.—Inside Jaw Chuck



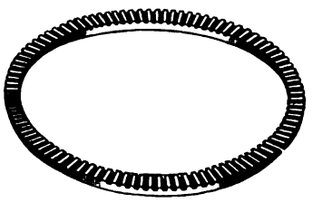


Fig. 828.

THREE JAWS.

6	inch	diameter and less	$26 00
9	"	"	34 00
12	"	"	44 00
15	"	"	52 00
18	"	"	62 00
21	"	"	80 00
24	"	"	100 00
30	"	"	170 00
36	inch	diameter	$230 00
36	"	For Car Wheels	250 00
30	"	" "	185 00

FOUR JAWS.

6	inch	diameter	$32 00
9	"		42 00
12	"		56 00
15	"		64 00

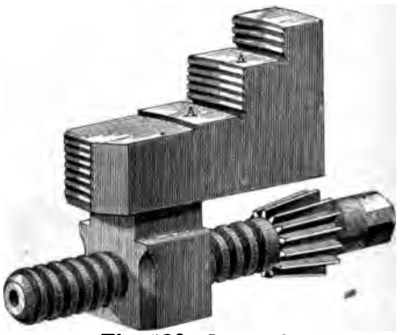


Fig. 830.—Showing Jaw.

18	inch	diameter	$75 00
21	"		95 00
24	"		120 00
30	"		200 00

WESTCOTT PATENT CHUCK

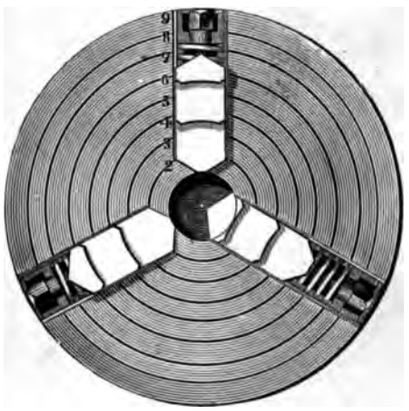


Fig. 831.

THREE JAWS.

4	inch	diameter, will hold	5	inch	inside Jaw	$22 00
6	"	"	8	"	"	26 00
9	"	"	12	"	"	34 00
12	"	"	15	"	"	44 00
15	"	"	18	"	"	52 00
18	"	"	21½	"	"	62 00
21	"	"	26	"	"	80 00
24	"	"	30	"	"	135 00
30	"	"	37	"	"	170 00
36	"	"	43	"	"	230 00
For Car Wheels,		"	43	"	"	250 00

FOUR JAWS.

4	inch	Diameter, will hold	5	inch	inside Jaws	$25 00
6	"	"	8	"	"	32 00
9	"	"	12	"	"	42 00
12	"	"	15	"	"	56 00
15	"	"	18	"	"	64 00
18	"	"	21½	"	"	75 00
21	"	"	26	"	"	93 00
24	"	"	30	"	"	120 00
30	"	"	36	"	"	200 00

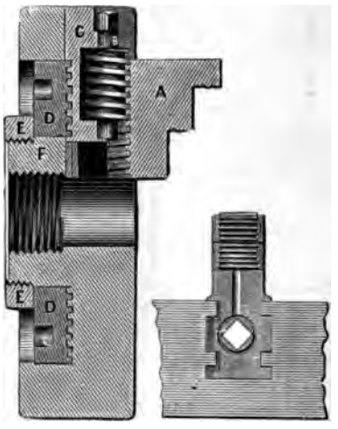


Fig. 832.

JUDSON'S LATHE AND PLANER CHUCK.

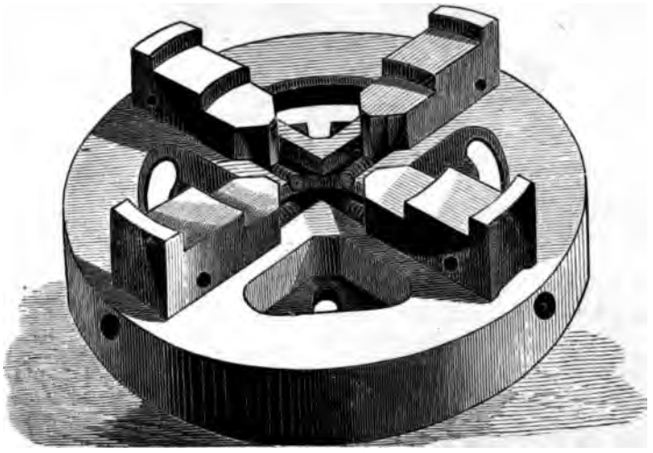


Fig. 833.

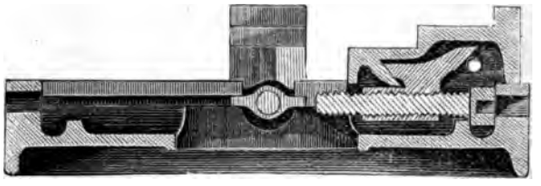


Fig. 834.

The special feature of this Chuck is the angle of the nut and jaw (see cut), by which the pressure of the screw toward the centre also presses the jaw firmly against the face of the Chuck, so the jaw can never tip up, holding the work more securely than any other chuck.

We make them both Independent and Universal; the screws in the Universal are geared in the centre, thus making the only chuck with a direct motion. The working parts are made of steel and wrought iron.

4½	inch		$15 00
6	"		20 00
9	"		25 00
12	"		30 00
15	"		35 00
18	"		45 00
20	inch		$55 00
24	"		70 00
28	"		90 00
30	"		100 00
36	"		150 00

DRILL CHUCKS.

ADJUSTABLE DRILL CHUCK.

Fig. 814.

Holds $\frac{1}{16}$ to $\frac{5}{8}$ inches.....$6 00

CENTRE DRILL CHUCK.

Each.....$2 50

PLUG ARBOR FOR DRILL CHUCKS.

Fig. 815.

Each.....$1 00

BEACH PATENT DRILL CHUCK.

Fig. 816.

No. 0 holds from 0 to $\frac{1}{8}$ inch diameter (for Jewelers).....$8 00
" 1 " " 0 " $\frac{1}{4}$ " " 8 00
" 2 " " 0 " $\frac{3}{8}$ " " 8 50
" 3 " " $\frac{1}{16}$ " $\frac{1}{2}$ " " 10 00
" 4 " " $\frac{5}{16}$ " $\frac{5}{8}$ " " 11 00

ALMOND CHUCK.

Fig. 817.

Holds Drills $\frac{5}{16}$ and under, each, $5 00

DRILL CHUCK.

Fig. 818.

2 inches diameter, takes drills to ½ inch, all the working parts are steel.....$7 50
Extra Sets of Jaws..... 2 00

GEARED DRILL CHUCK.

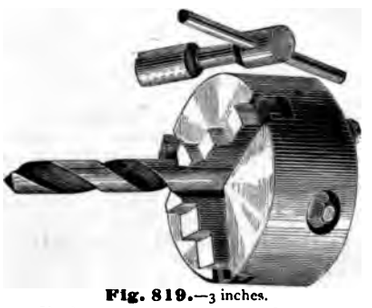


Fig. 819.—3 inches.

Each.....$10 00

Self-Centring Little Giant Drill Chuck.

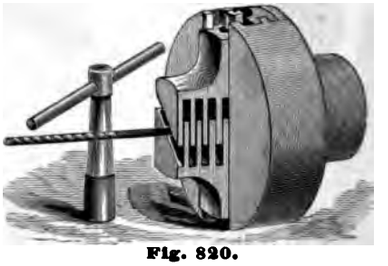


Fig. 820.

No. 1 Holds from 0 to ½ inch.....$9 00
" 2 " " 0 " 1 " 10 00

KEY DRILL CHUCK.

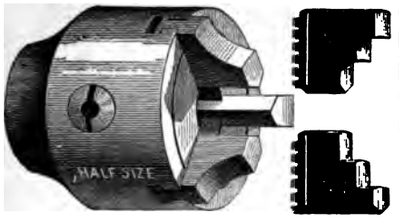


Fig. 821.

Holds drills $\frac{1}{64}$ to $\frac{5}{16}$ inch, each.....$8 00
With 2 sets Jaws, $10 00

VICTOR CHUCK.

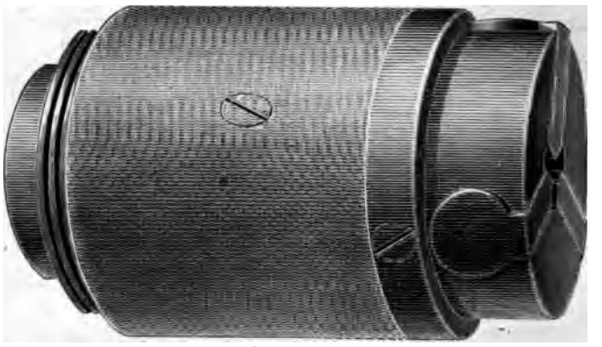


Fig. 823.

Holds from 0 to ⅜.....$8 50

DANBURY CHUCK.

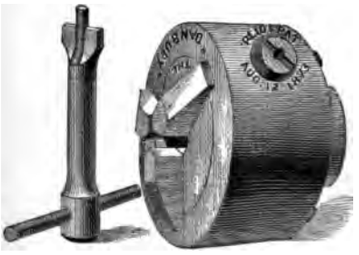


Fig. 824.

Each.....$8 50

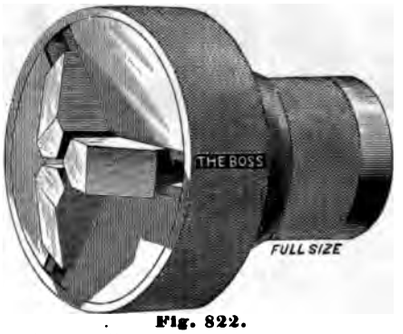


Fig. 822.

Holds drills from 0 to ⅜ inch.....$6 50

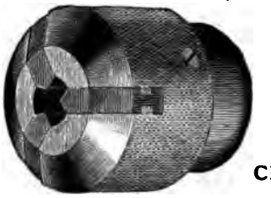


Fig. 825.

CENTENNIAL DRILL CHUCK.

(Fig. 825.)

Hold drills from $\frac{1}{64}$ to ½ inches.....$4 25

CENTRE DRILL CHUCK.

Fig. 826.

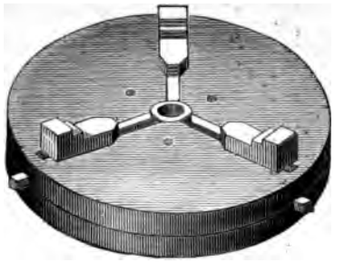
Each.....$2 50

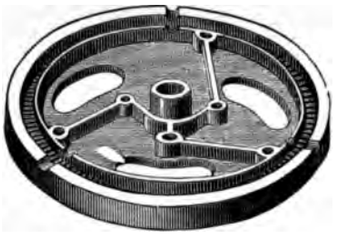
GEARED DRILL CHUCK.

Fig. 827.—2 inches.

Holds drills to ½ inch.....$7 50

THE HORTON LATHE CHUCK.





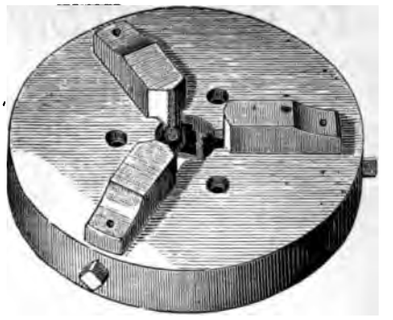
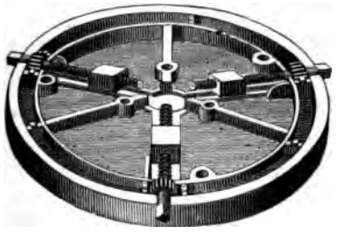


Fig. 829.—Inside Jaw Chuck



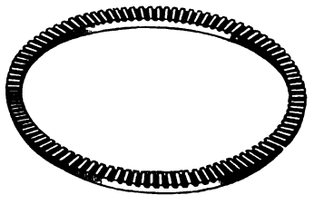


Fig. 828.

THREE JAWS.

6	inch	diameter and less	$26 00
9	"	"	34 00
12	"	"	44 00
15	"	"	52 00
18	"	"	62 00
21	"	"	80 00
24	"	"	100 00
30	"	"	170 00
36	inch	diameter	$230 00
36	"	For Car Wheels	250 00
30	"	" "	185 00

FOUR JAWS.

6	inch	diameter	$32 00
9	"		42 00
12	"		56 00
15	"		64 00

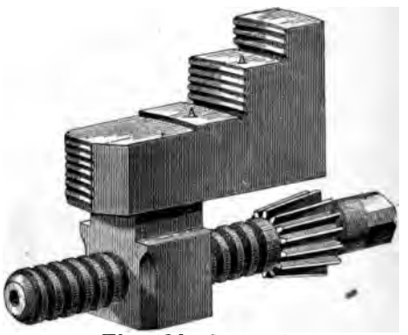


Fig. 830.—Showing Jaw.

18	inch	diameter	$75 00
21	"		95 00
24	"		120 00
30	"		200 00

WESTCOTT PATENT CHUCK

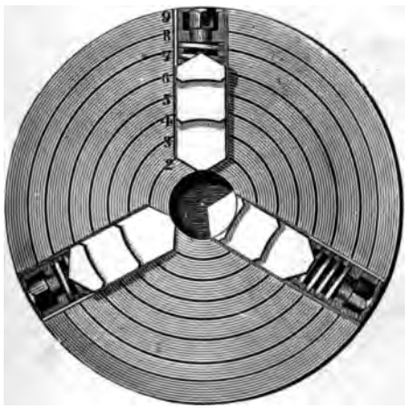


Fig. 831.

THREE JAWS.

4	inch	diameter, will hold	5	inch	inside	Jaw $22 00
6	"	" "	8	"	"	26 00
9	"	" "	12	"	"	34 00
12	"	" "	15	"	"	44 00
15	"	" "	18	"	"	52 00
18	"	" "	21½	"	"	62 00
21	"	" "	26	"	"	80 00
24	"	" "	30	"	"	135 00
30	"	" "	37	"	"	170 00
36	"	" "	43	"	"	230 00
For Car Wheels,		"	43	"	"	250 00

FOUR JAWS.

4	inch	Diameter, will hold	5	inch	inside	Jaws $25 00
6	"	" "	8	"	"	32 00
9	"	" "	12	"	"	42 00
12	"	" "	15	"	"	56 00
15	"	" "	18	"	"	64 00
18	"	" "	21½	"	"	75 00
21	"	" "	26	"	"	95 00
24	"	" "	30	"	"	120 00
30	"	" "	36	"	"	200 00

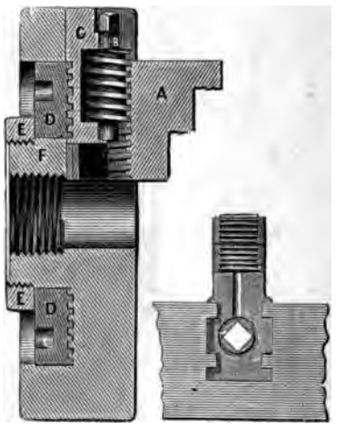


Fig. 832.

JUDSON'S LATHE AND PLANER CHUCK.

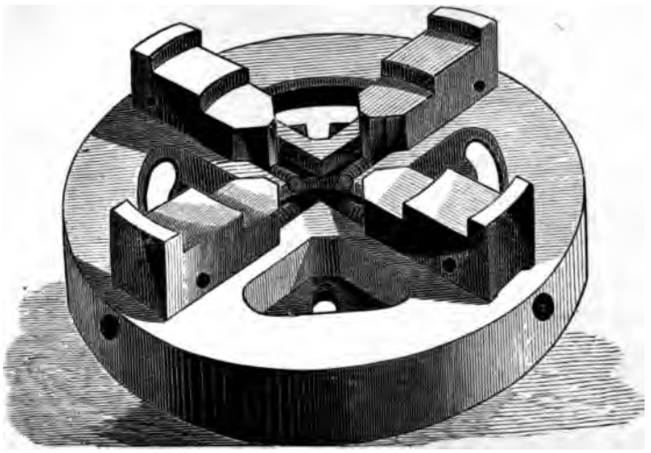


Fig. 833.

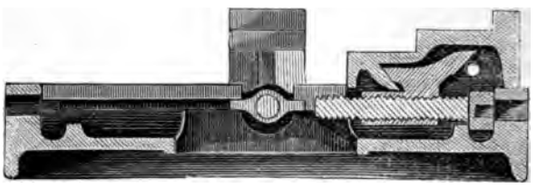


Fig. 834.

The special feature of this Chuck is the angle of the nut and jaw (see cut), by which the pressure of the screw toward the centre also presses the jaw firmly against the face of the Chuck, so the jaw can never tip up, holding the work more securely than any other chuck.

We make them both Independent and Universal; the screws in the Universal are geared in the centre, thus making the only chuck with a direct motion. The working parts are made of steel and wrought iron.

4½	inch		$15 00
6	"		20 00
9	"		25 00
12	"		30 00
15	"		35 00
18	"		45 00
20	inch		$55 00
24	"		70 00
28	"		90 00
30	"		100 00
36	"		150 00

D. E. WHITON'S CHUCKS.

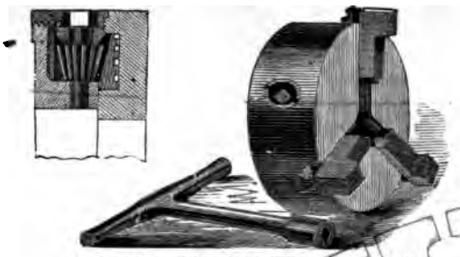


Fig. 835.—GEARED SCROLL CHUCK.

Fig. 836.—IMPROVED GEARED CHUCK.

Fig. 837.—IMPROVED LEVER CHUCK.

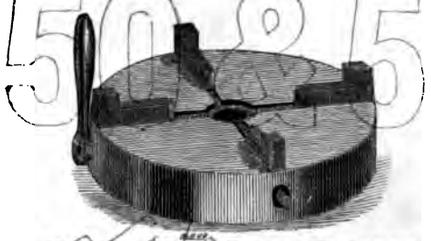


Fig. 838.—INDEPENDENT JAW CHUCK.

Size, inch.	Geared Scroll.	Improved Gear.	Improved Lever.	Independent Jaw.
2	$7 50			
3	10 00	$10 00	$8 00	
4			10 00	
4½	13 00	13 00		
6	16 50	16 50	16 00	
7½	19 00	19 00		
9	22 00	22 00	21 00	$24 00
12		29 00	26 00	30 00
15			32 00	36 00
18			38 00	45 00
21			48 00	55 00
24			60 00	65 00

HENRY WHITON'S CHUCKS.

Size, inch.....	2	3	4	6	9	12	15
Lever.	$8 00	8 00	10 00	15 00	22 00	28 00	34 00
Independ't Screw,			14 00	18 00	24 00	30 00	36 00
Geared.....		11 00	14 00	18 00			

WASHBURN'S CHUCKS.

Fig. 839.—FIVE INCH CHUCK, WITH COMMON JAWS.

Fig. 840.—COMMON SCROLL CHUCK.

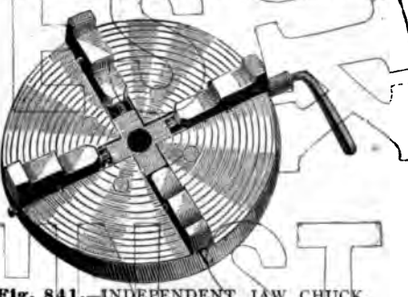


Fig. 841.—INDEPENDENT JAW CHUCK.

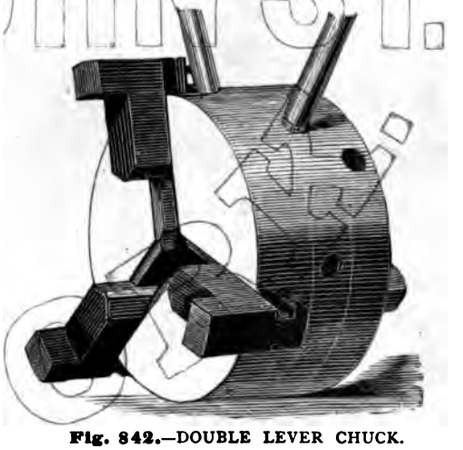


Fig. 842.—DOUBLE LEVER CHUCK.

Size, inch.	Lever.	Independent Jaw Screw.	Geared.
2			$7 50
3	$6 00		10 00
4	8 00		13 00
5			14 00
6	13 00		16 00
9	20 00	$24 00	22 00
12	25 00	30 00	
14			40 00
15	30 00	35 00	
18	35 00	40 00	
21	48 00	50 00	

QUICK SUPPLIES
50 & 52 JOHN ST.
NEW-Y

CUSHMAN'S CHUCKS.

Fig. 843.—IMPROVED LEVER SCROLL CHUCK.

Fig. 844.—COMMON LEVER SCROLL CHUCK.

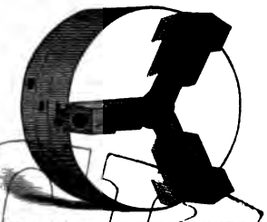


Fig. 845.—DOUBLE LEVER SCROLL CHUCK.

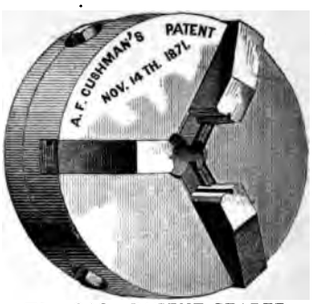


Fig. 846.—PATENT GEARED SCROLL CHUCK.

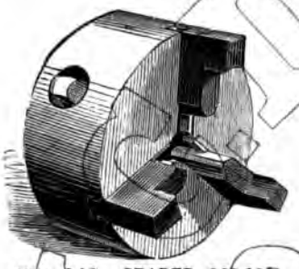


Fig. 847.—GEARED SCROLL CHUCK.

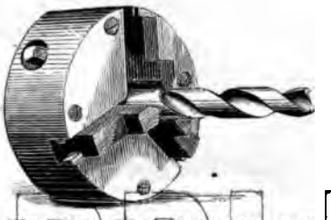


Fig. 848.—GEARED CHUCK, WITH REVERSE JAWS.

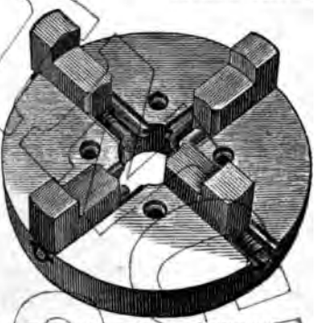


Fig. 849.—NEW IMPROVED INDEPENDENT JAW CHUCK.

Size, inch	2	3	4	5	6	9	12	15	18	20	21	24
Improved Lever Scroll	(Fig. 843)					22 00	28 00	34 00	40 00		50 00	
Common " "	(" 844)				$16 00	21 00	26 00	32 00	38 00		48 00	
Double " "	(" 845)	$8 00	10 00									
Patent Geared "	(" 846)	11 00	13 00	15 00	17 50	22 00	30 00					
Geared "	(" 847)	10 00	12 00	14 00	16 50	21 00	29 00					
" Reverse Jaws	(" 848)	10 00	12 00	14 00	16 50	21 00	29 00					
Improved Independent Jaw,	(" 849)				20 00	25 00	30 00	35 00	45 00	50 00	55 00	65 00

Add 20 per cent for 4 Jaws, and 20 per cent for 2 sets of Jaws.

DUNCAN SUPPLIES 50 & 52 JOHN ST WORCESTER

JOHNSON'S PATENT UNIVERSAL LATHE CHUCK.

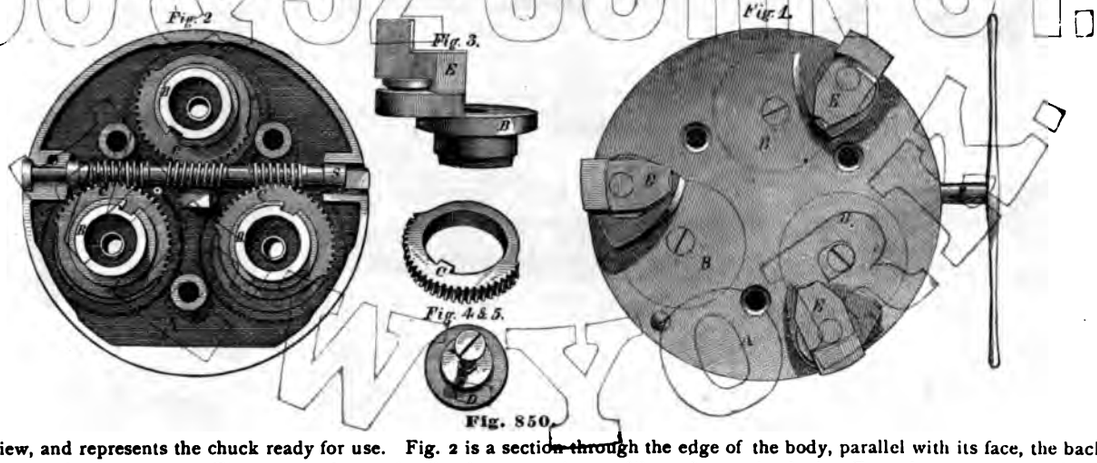


Fig. 850.

Fig. 1 is a face view, and represents the chuck ready for use. Fig. 2 is a section through the edge of the body, parallel with its face, the back part being removed to show the internal arrangement. Figs. 3, 4, and 5 are details of construction readily understood; the jaw E revolves upon a steel pin in the arm of wheel B, to which it is also tongued and grooved, but which, when turned to a certain position, can be removed therefrom at will. The toothed ring C has a solid feather, and is accurately fitted and forced to its seat upon B. The screw and plate D secure B in place. The worm shaft S is of cast steel. The toothed rings C C C and jaws E E E are of hammered iron, and are thoroughly case-hardened. The wrench P is well fitted and hardened. A small screw is inserted in the face of the chuck, to prevent running the wheels out unintentionally. A screw will also be found in the edge of the chuck for the purpose of oiling. It will be noticed that as the wheels revolve, the jaws adjust themselves to the work, and can be reversed or turned in any position at pleasure, and that this chuck is thereby adapted to a great variety of work. It will also hold from the smallest piece to the full size of the chuck, with a *pressure that increases with the diameter of the work held*, and is unequaled for firmness, durability, and adaptation to the general work of the machine shop.

INCLUDING WRENCH AND BOLTS.

7 inch $25 00	13 inch 45 00	18 inch 65 00	24 inch 100 00
10 " 35 00	15 " 55 00	21 " 80 00	

LeCOUNT'S PATENTS.

VICE CLAMP.

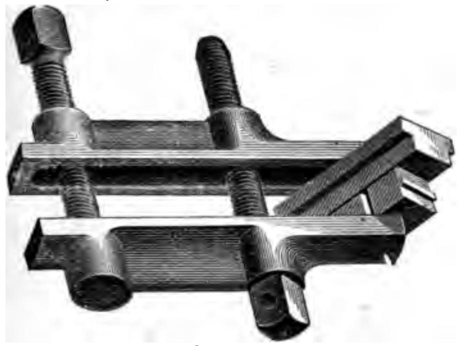


Fig. 851.

No. 1—Opening 1 inch.............................. $1 25
" 2— " 2 " 1 60
" 3— " 3 " 2 00

STEEL CLAMP DOG.

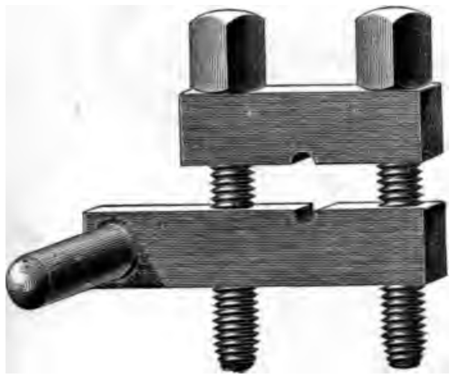


Fig. 852.

No. 1—Opens 1 inch.............................. $1 25
" 2— " 1½ " 1 50
" 3— " 2 " 1 75
" 4— " 3 " 2 00

NEW and IMPROVED BOILER CLAMP.

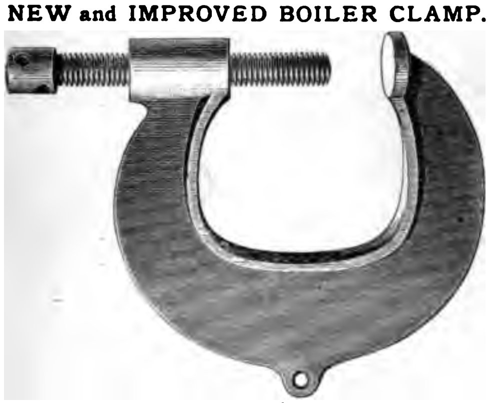


Fig. 853.

Steel.............. $4 00 Iron.................. $3 00

BOLT DOG.

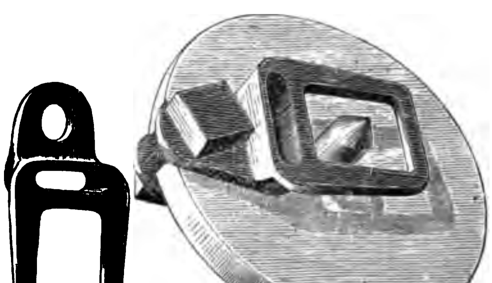


Fig. 854.

Set of twelve sizes, from 5-16 to 2 inches, inclusive. ... $2 50

MACHINIST'S CLAMP.

Malleable Iron, with Hollow Back and Steel Screws, hardened.

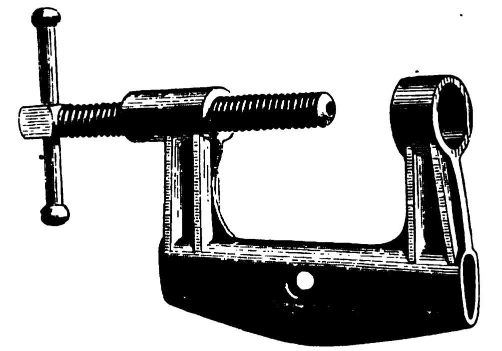


Fig. 855.

No 1-2 inch.......... $1 40 No. 4—5 inch........ $2 00
" 2—3 " .... 1 60 " 5—6 " 2 20
" 3—4 " .... 1 80 Set.................. 9 00

STEEL CHUCK DRILL HOLDERS.

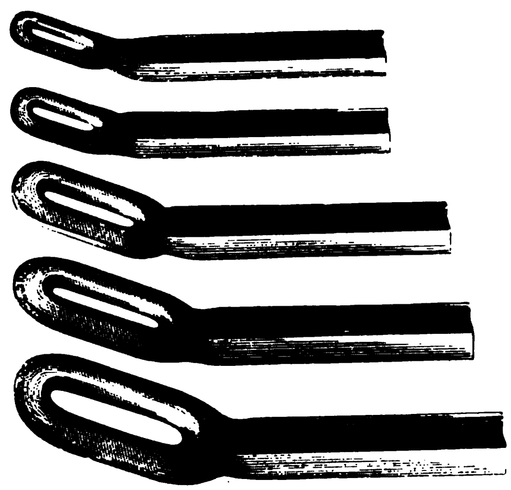


Fig. 856.

No. 1—Taking Drills from ⅜ to 9-16.................. $0 50
" 2— " " " 9-16 to ¾.................. 50
" 3— " " " ¾ to 1 1-18.................. 60
" 4— " " " 1 1-18 to 1 5-8.................. 75
" 5— " " " 1 5-8 to 2.................. 90
Set.............................. 3 25

STEEL DOG WRENCH.

Fig. 857.

Fitting Screw Heads from ⅜ to ¾ inch square, for both Dogs and Tool Post, finished and hardened..........$0 75

STEEL CLAMP.

Fig. 858.

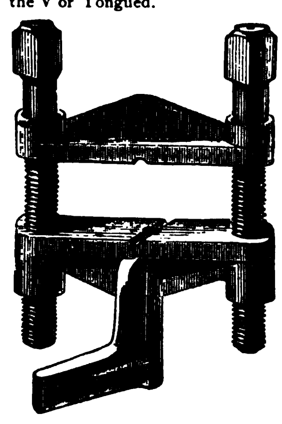
No. 1—2 inch........ $1 50 No. 4—5 inch....... $2 25
" 2—3 " .... 1 75 " 5—6 " 2 50
" 3—4 " .... 2 00 Set.............. 10 00

DIE DOGS.

Fig. 859.

No. 1—Opens ½ inch.............. $1 25—Extra Dies, $0 25
" 2— " ¾ " .... 1 60— " " 37
" 3— " 1 " .... 2 00— " " 50
" 0— " ¾ " Amateurs, or for Foot Lathes........ 1 25— " " 37

When ordering Extra Dies, please state which you require, the V or Tongued.



MALLEABLE IRON CLAMP DOG.

No. 1.............. $1 00
" 2.............. 1 10
" 3.............. 1 30
" 4.............. 1 60
Set of 4.............. 5 00

Fig. 860.

HOLLOW LATHE DOG.

Fig. 861.

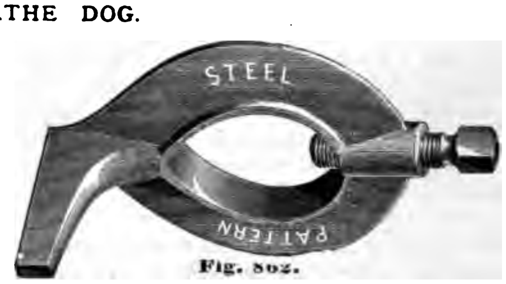


Fig. 862.

No.	0	1	2	3	4	5	6	7	8	9	10	11	12		
Size, inch	¼	⅜	½	¾	1	1¼	1½	1¾	2	2½	3	3½	4	5	6
Malleable Iron	$0 35	35	40	50	60	75	90	1 00	1 10	1 35	1 50	1 70	1 90	4 00	5 00
Cast Steel		40	50	60	70	85	95	1 10	1 20	1 40	1 60	1 80	2 00		

Set of 8 small sizes, ⅜ to 2 inch inclusive, Malleable Iron, $5 60; Cast Steel, $6 30—Full Set of 12 small sizes, ⅜ to 4 inch, inclusive, Malleable Iron, $12 00; Cast Steel, $13 00.

SCREW CLAMPS, MALLEABLE IRON.

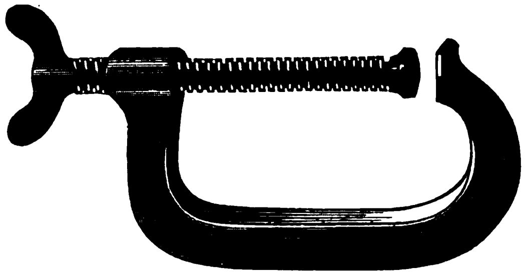


Fig. 863.

Width of opening about	2	3	4	5	6	7	8	10 inches.
Per dozen	2 40	4 80	7 20	8 20	9 20	10 20	12 00	15 00

PATENT MALLEABLE CLAMP.

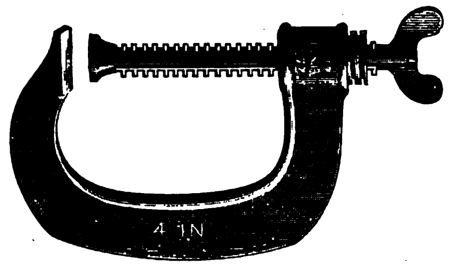


Fig. 868.

Size opening, inches	3	4	5	6	8
Per dozen	$4 50	6 50	7 50	9 00	11 50

PEARSON'S PATENT CLAMP.

PATENTED AUGUST 11, 1868.

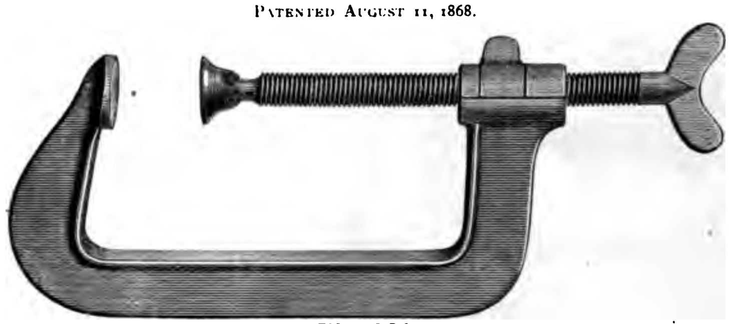


Fig. 864.

By turning the nut to the left, the screw is released, and can at once be fixed in any desired position.

Width of opening about	2	3	4	5	6	7	8 inches.
Per dozen	$4 00	5 00	7 50	8 50	11 00	14 00	16 00
" Swivel Clamp					12 00	15 00	17 00

IMPROVED SCREW CLAMP.

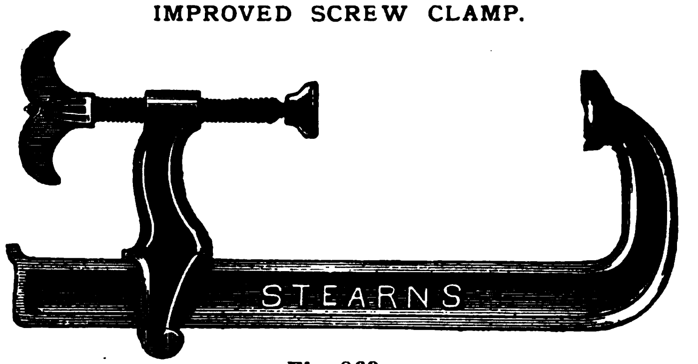


Fig. 869.

No. 1. 3 inches, per dozen	$4 00
" 2. 5 " "	5 50
" 3. 7 " "	7 00
" 4. 9 " "	8 00

CLAMP, DIE, AND COMMON LATHE DOGS,

FORGED FROM BAR STEEL AND HARDENED.

Fig. 865.—CLAMP DOG.

No. 1. 1¾ in. between screws,	$1 50
" 2. 2¼ " " "	2 00
" 3. 2¾ " " "	2 50
Per set of three	5 50

Fig. 866.—DIE DOG.

But one size of this tool is now made.

Other sizes will be, should the trade demand.

1¼ inch between sides, $3 00

Extra Dies, per pair. . . 50

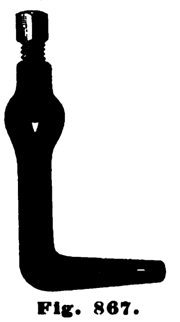


Fig. 867.

COMMON DOG.

Four sizes of this tool are now manufactured.

⅜ inch	$0 50
½ "	60
¾ "	70
1 "	80

Four larger sizes will soon be ready for the market.

Combination Lathe, Dog-Clamp and Drill-Jig.

Fig. 870.

No. 1. Opens 1½ inches	$1 25
" 2. " 2 "	1 50
" 3. " 3 "	1 75

Patent Lathe Dogs.

Fig. 871.

No	1	2	3	4
Inch,	[illegible]	½	¾	1
	$0 30	.40	.50	.60

HAND BOLT CUTTERS.

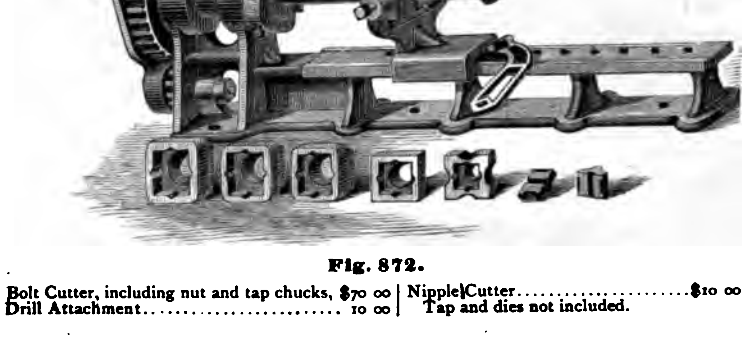


Fig. 872.

Bolt Cutter, including nut and tap chucks,	$70 00
Drill Attachment	10 00
Nipple Cutter	$10 00

Tap and dies not included.

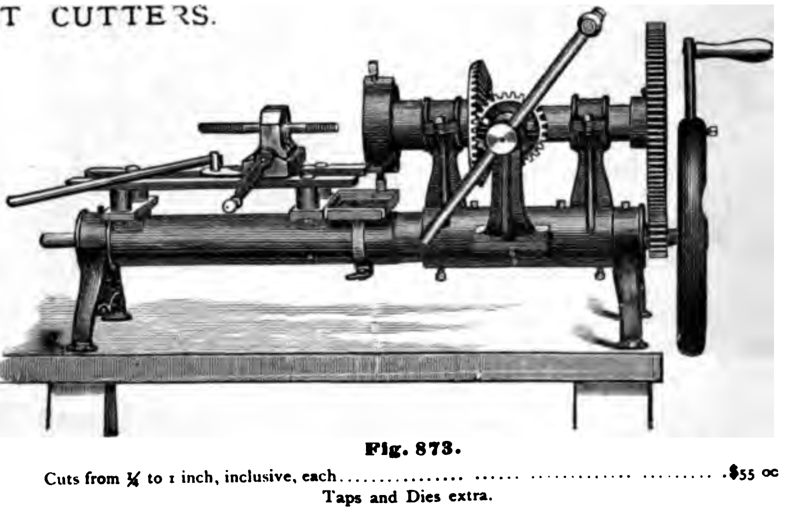


Fig. 873.

Cuts from ¼ to 1 inch, inclusive, each $55 00

Taps and Dies extra.

SCHLENKERS' STATIONARY DIE BOLT CUTTERS.

No. 2 —With improved Chuck, including 8 sets Dies, 8 Master Taps for recutting Dies, Cone, Pulleys, C. S. and Hangers, and Nut Holder, cuts V Thread ⅜ to 1½ inch..... $300 00

With extra Centre, including 3 sets Dies (⅜ to 1¼ inch) and 3 Master Taps..... 30 00

No. 2½—With improved Chuck, including 11 sets Dies, 11 Master Taps, Countershaft, Parallel Vise and Nut Holder, has 2 Centres to Cutter Head, and cuts V Thread, ⅜ to 2 inch, and Square Thread ⅜ to 1½ inch, has Back Gear, and 7 different Speeds..... 400 00

No. 3 —With improved Chuck, 9 sets Dies, 9 Master Taps, Countershaft, and Parallel Vise, cuts V Thread ⅜ to 2¼ inch..... 500 00

Centre to Cutter Head for Wide Dies, will cut V Thread to 3 inch, and Square Thread to 2¼, 3 sets Dies and 3 Master Taps, extra.. 100 00

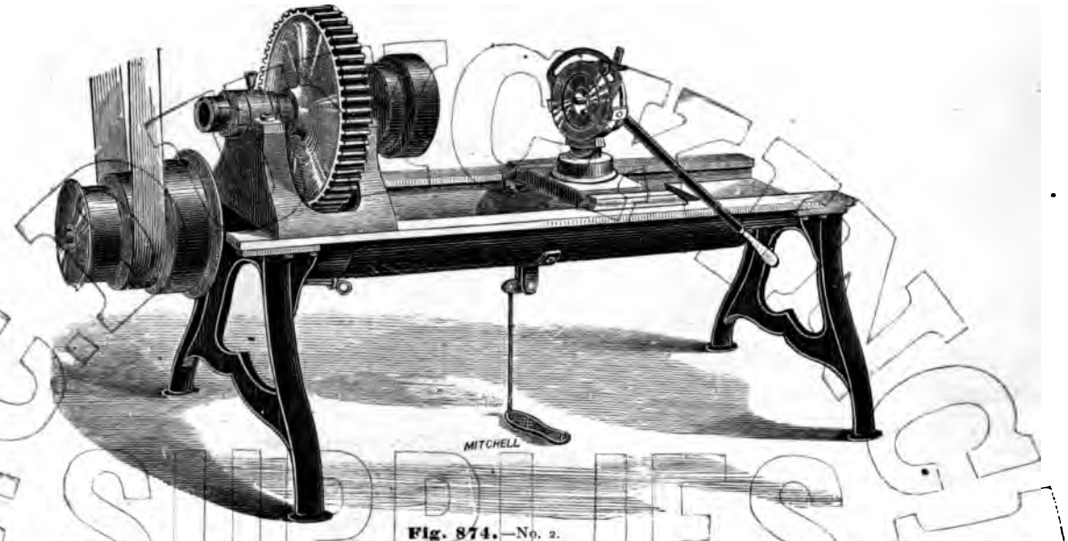


Fig. 874.—No. 2.

EXTRA DIES FOR STATIONARY DIE BOLT CUTTERS.

For Nos. 2 and 2½ Cutter Head, per set, Blank, Narrow	$1 50	Wide, $2 25
Cutting same, per set, Narrow	75	" 75
For No. 3 Cutter Head, per set, Blank, Narrow	4 50	" 6 00
Cutting same, per set, Narrow	1 00	" 1 50

Dies must be cut in the head in which they are to be used.

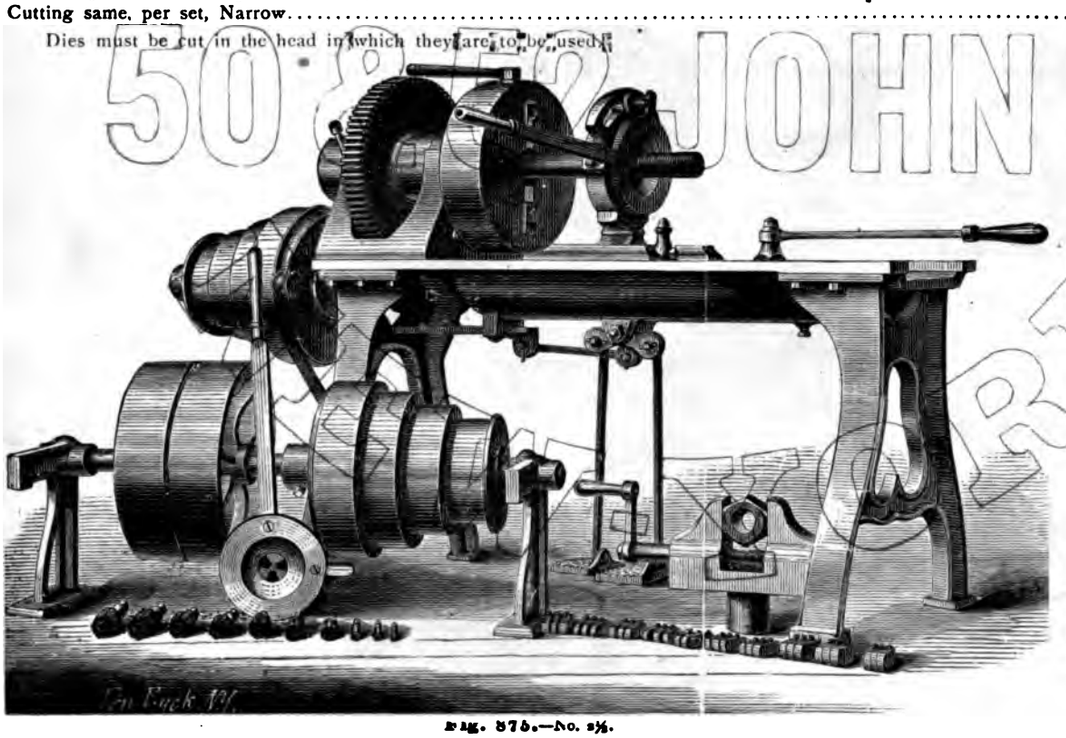


Fig. 875.—No. 2½.

Fig. 876.—No. 3. CUTTER HEAD.

BOLT CUTTER HEADS FOR CUTTING SQUARE THREADS.

No. 2 —With 8 sets Dies..... $100 00

" 2½— " 11 " " and 2 Centres..... 130 00

No. 3—With 12 sets Dies and 2 Centres..... $175 00

" 3— " 9 " " 125 00

SCHLENKER'S AUTOMATIC

Revolving Die Double Headed Bolt Cutter and Nut Tapping Machine.

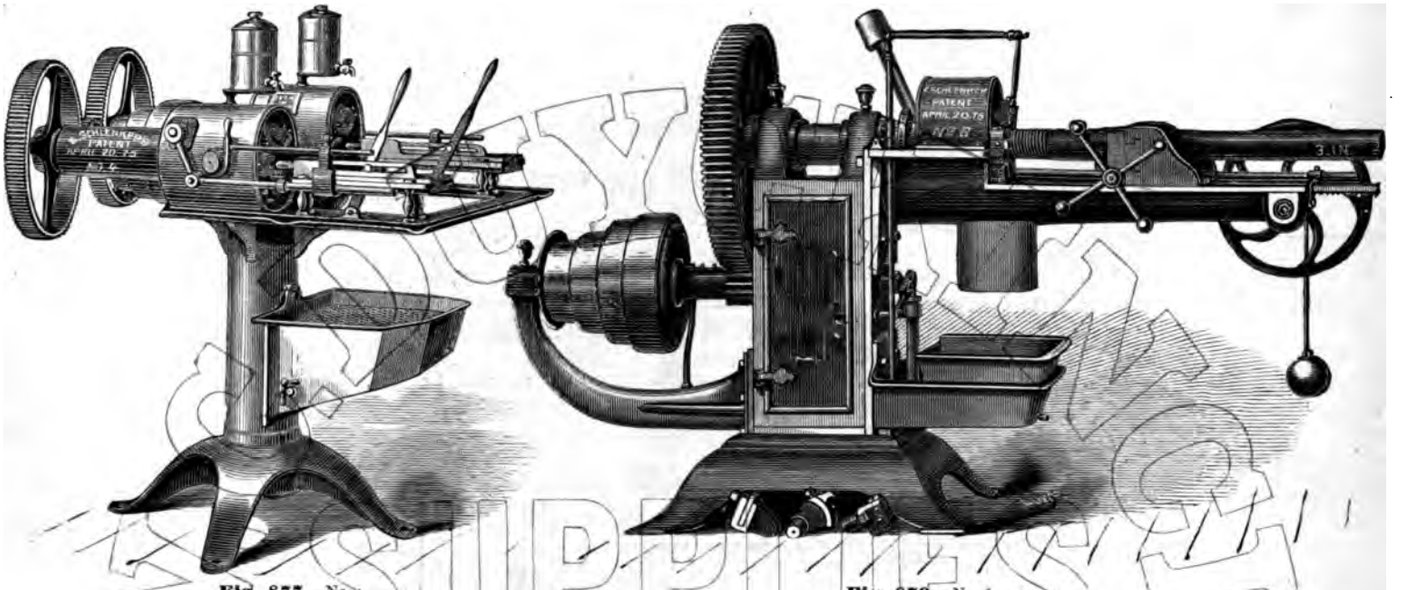


Fig. 877.—No. 4. **Fig. 879.**—No. 6.

Number.	Sets of Dies with Steel Chuck.	Master Taps.	Nut Tap Holders.	Dies and Chuck for Nut Tapping.	Oil Cans.	Cuts.	Each.
4	16	8	8	3	2	¼ to ⅞	$350 00, has 2 heads for cutting.
5	9	9	9	3	1	¼ to 1¼	250 00
5½	14	14	14	3	1	⅜ to 2	350 00
6	18	18	18	3	—	⅜ to 3	760 00
7	18	18	8	3	—	⅜ to 3	820 00, has a nut tapping combination.

Countershafts complete and Steel Wrench with each Machine. Nos. 6 and 7 have Lubricating Pump. Nut Taps not included in the above price.
Franklin Institute Standard Threads always sent, unless otherwise ordered.

Extra Dies for Revolving Die Bolt Cutters for cutting	¼ to ⅞	¼ to 1¼	⅜ to 1⅜	1⅜ to 1¾	1⅞ to 2	2½ to 3
Steel Chucks with Dies cut, per set of 3	$5 25	5 25	9 00	11 00	12 00	14 00
Blank Dies, per set of 3	1 50	1 50	1 50	2 50	3 00	4 00

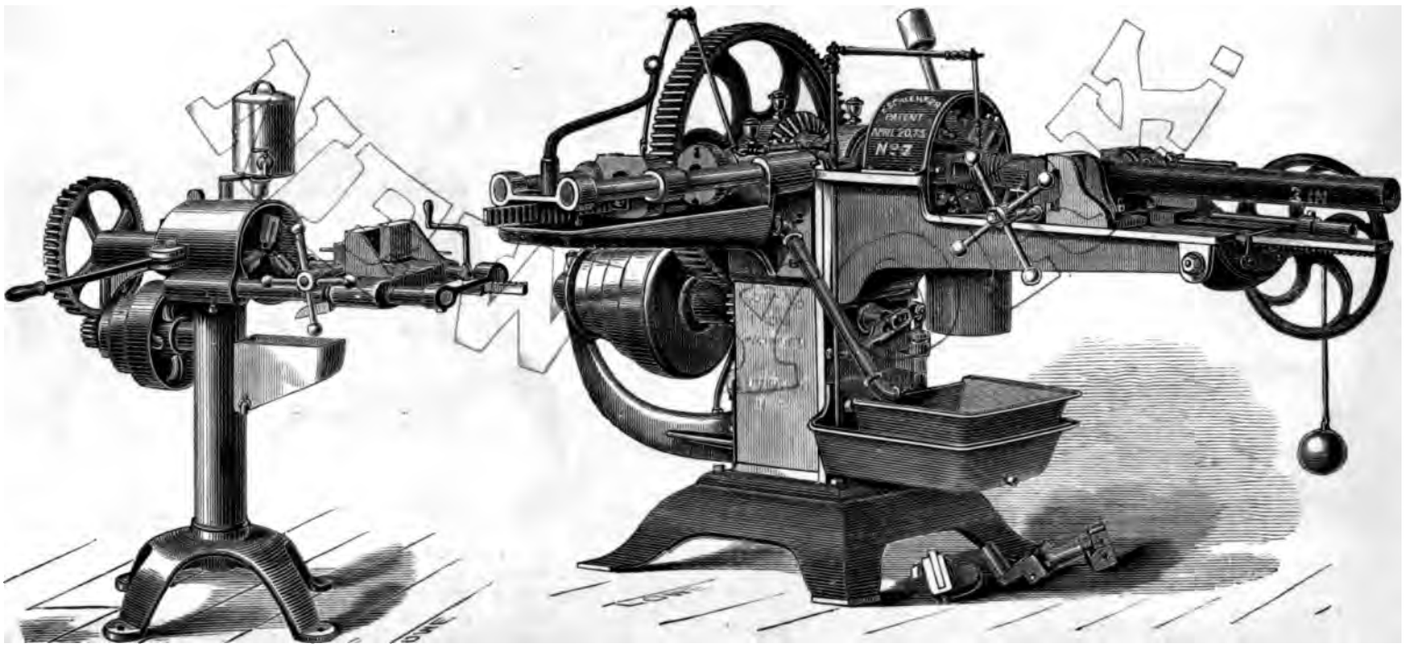


Fig. 878.—No. 5. **Fig. 880.**—No. 7.

THE LIGHTNING BOLT CUTTERS AND NUT TAPPERS.

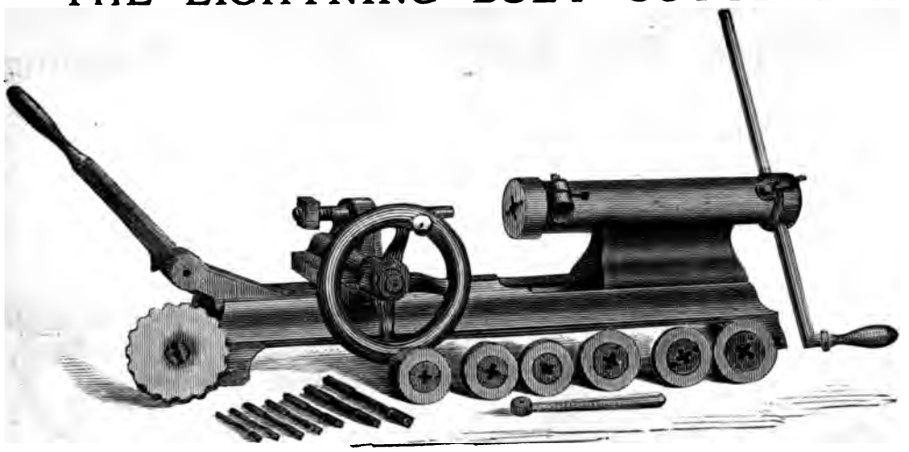


Fig. 881.—No. 0. Carriage Maker's Hand Bolt Cutter and Nut Tapper.

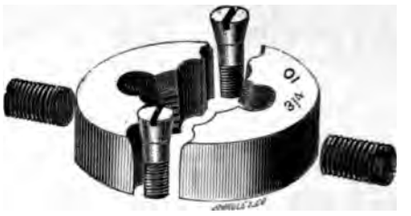


Fig. 882.—Die shown out of its Socket with its Screws.

No. 0—Especially for crooked work. **Made to be bolted to the bench or table. Fitted with seven sizes,** from ¼ to ¾ inch. Usual assortment, ¼, 5-16, ⅜, 7-16, ½, 5-8, and ¾ inch.

With Taps, Dies in Collets, etc., complete.... $60 00
Collets, for extra Dies, each..... 1 00

DIES FOR MACHINES.

Diameter, inches.....	¼	5-16	⅜	7-16	½	9-16	⅝	11-16	¾	13-16
No. of Threads to inch.....	18 and 20	16 and 18	14 and 16	12, 14, and 16	12, 13, and 14	12 and 14	10, 11, and 12	11 and 12	10	10
Machine Dies, each.....	$1 00	1 00	1 15	1 30	1 50	1 75	1 90	2 10	2 35	2 60
Pipe Dies, each.....	1 50		1 90		2 35				3 75	

Diameter, inch.....	⅞	15-16	1	1⅛	1¼	1⅜	1½	1⅝	1¾
No. of Threads to inch.....	9 and 10	9	8	7 and 8	7	6	6	5	5
Machine Dies, each.....	$3 00	3 40	3 75	4 40	5 00	5 75	7 00	8 50	10 00
Pipe Dies, each.....			5 00		5 50		5 50		
Collets for holding Dies, each.....									$1 00

Threads of peculiar number and shape furnished at extra price, according to cost or agreement.

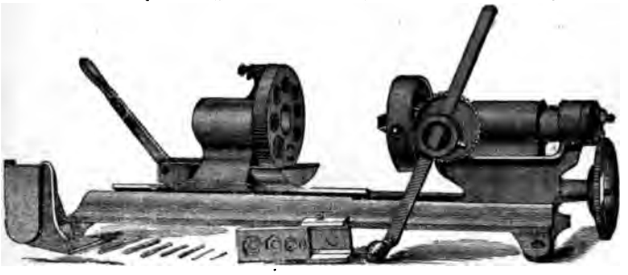


Fig. 883.—No. 1. Bolt Cutter, Nut Tapper, and Drill Combined.

For the Bench or Table. Fitted with seven sizes, from ¼ to ¾ inch. Usual assortment, ¼, 5-16, ⅜, 7-16, ½, ⅝, and ¾ inch. Drill with Automatic Feed.

With Taps, Dies, Nut Chuck, and Drill Rest..... $85 00

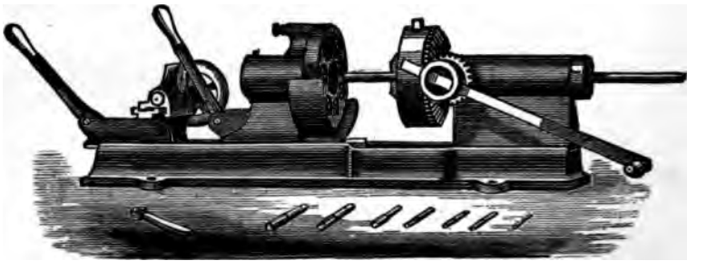


Fig. 884.—No. 1½. Bolt Cutter and Nut Tapper.

For the Bench or Table. Fitted with seven sizes, from ⅜ to 1 inch, inclusive. Usual assortment, ⅜, 7-16, ½, ⅝, ¾, ⅞, and 1 inch. All 1-32 over exact standard, unless otherwise ordered.

Complete, with Taps, Dies, Nut Chuck, etc..... $100 00

If desired, we can furnish the following extra Tools with Nos. 1½ and 2½ Machines: Taps and Dies (in Collets) for Nuts and Bolts, ¼ inch, $2 75; 5-16 inch, $2 90; 1 1-8 inch, $9 65; 1¼ inch, $10 88.

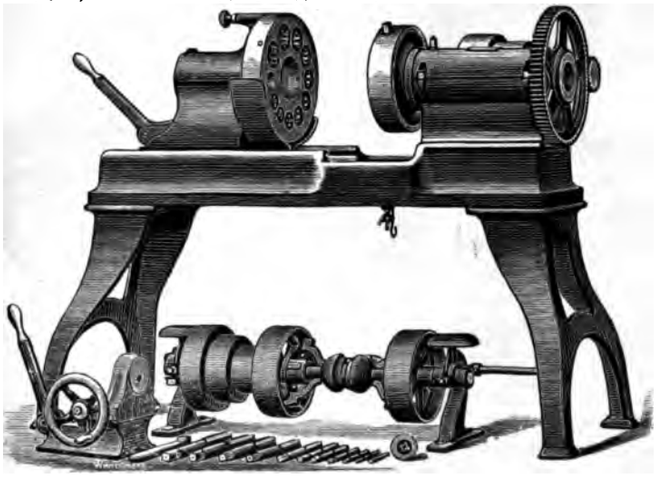


Fig. 885.—No. 5½. Bolt Cutter and Nut Tapper.

Fitted with eleven sizes, from ⅜ to 1½ inch. Usual assortment, ⅜, 7-16, ½, ⅝, ¾, ⅞, 1, 1⅛, 1¼, 1⅜, and 1½ inch.

Complete, including Countershaft..... $350 00
1¾ inch Tap, Die, and Collet, when required..... 20 25

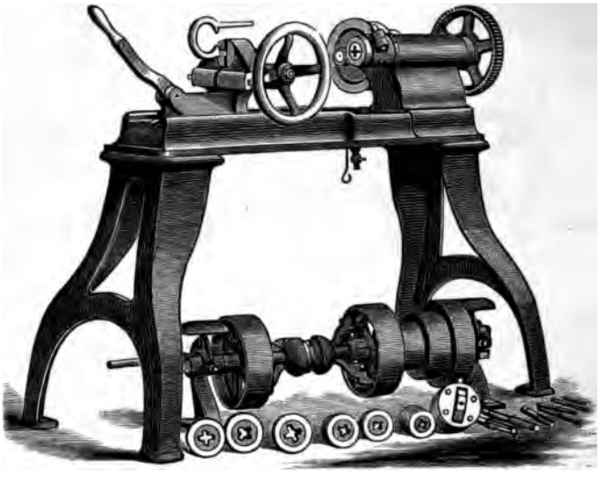


Fig. 886.—No. 40. Bolt Cutter and Nut Tapper.

Fitted with seven sizes, from ⅜ to 1 inch. Usual assortment, ⅜, 7-16 ½, ⅝, ¾, ⅞, and 1 inch.

With above Taps and Dies (in Collets), Nut Chuck, Countershaft, etc., complete..... $175 00
Collets for Dies, each..... 1 00

GRANT'S PATENT BOLT CUTTERS.

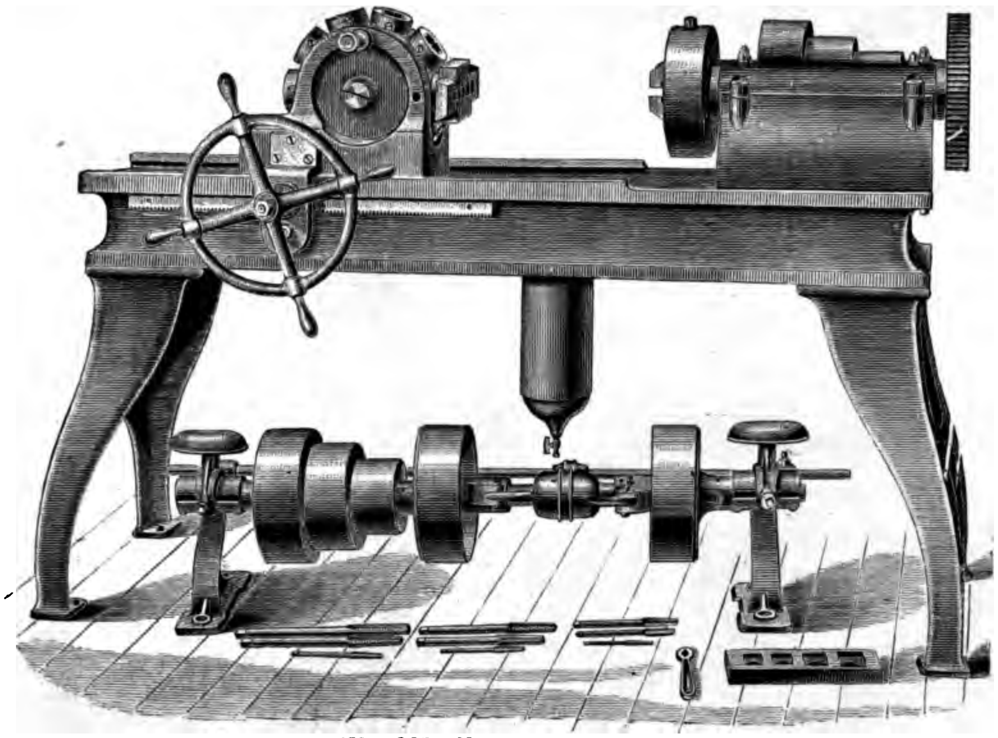


Fig. 887.—No. 3 Power Bolt Cutter.

No. 1	—Cuts Bolts	¼ to ¾ inch,	7	Taps and Dies......	$65 00
" 2	— "	⅜ to 1 "	7	" "	115 00
" 2	— "	⅜ to 1 "	7	" " with Legs,	125 00
" 2½	— "	½ to 1½ "	9	" "	175 00
" 3	—Power Cuts Bolts	⅜ to 1 inch,	7	Taps and Dies,	250 00
" 4	— " "	½ to 1½ "	9	" "	350 00

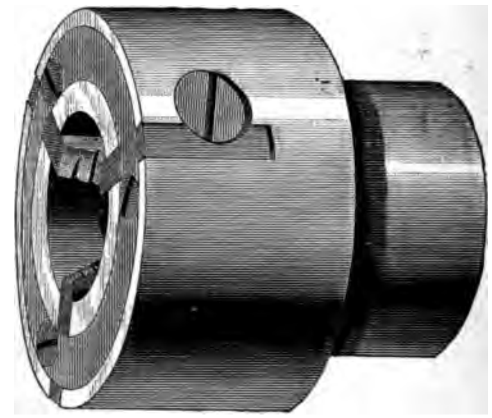


Fig. 888.

The above cut represents the dies that will be furnished with Nos. 1, 2, 2½, 3, and 4 Bolt Cutters, inclusive. They consist of 3 chasers inserted in radial recesses in an iron disk or collet, held in place and bound together by a flat steel ring, which is let into the face of the collet and chasers, and secured to the collet by three screws. One chaser only is adjustable, and this one is adjusted and set by a substantial screw placed in the periphery of the collet. The other two chasers, held rigidly in one position by the ring, act as back rests, and cut to the size for which they are made, or according to the adjustment of the first chaser. The shanks of the collet are slotted for key and bolt, or suitably prepared for a set screw, by which they are held and secured in place in their respective machines.

The dies cut clean, full threads rapidly, in once passing over the bolt, and finish the threads as well as they are usually finished in an engine lathe.

The chasers. when dull, may be quickly removed from the collet, and ground on an ordinary grindstone, and thus be kept sharp till worn out. If the chasers are cleaned after grinding, and put back in the slots in the collet (also clean) according to their numbers, no trouble about adjustment can possibly arise.

The dies for No. 1 and larger die stocks differ from the above only in the size and form of the collet, their shanks being short and finished in a way to guide the bolt while being cut, and allow chips to pass out without clogging the die.

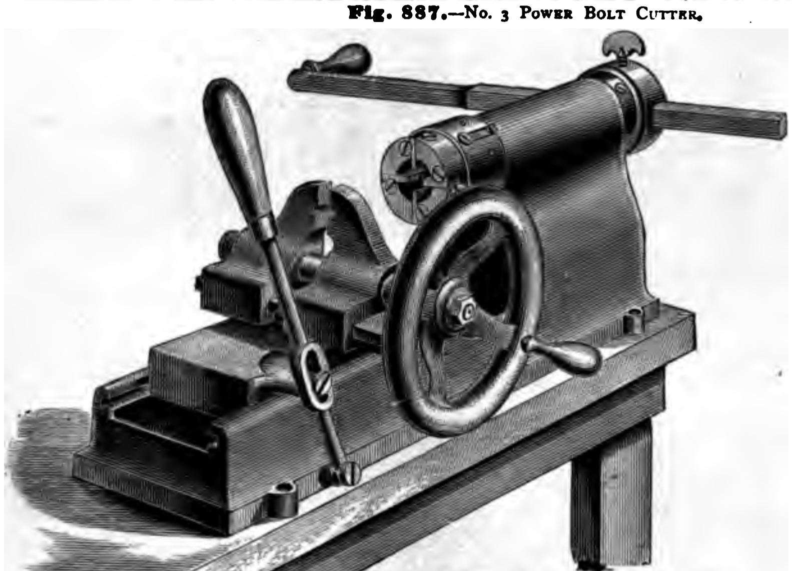


Fig. 889.—No. 1 Hand Bolt Cutter.

Die Stock No......................	1	2	3	4
Weight, ounces............................	12	40		
Each	$3 25	5 00	7 00	12 00
Box....	1 00	1 35	2 25	2 75

Collet, with Ring and Screws, for Die Stock No.....	1	2	3	4
Weight, ounces.................	6	19		
Each............	$1 10	1 30	1 70	1 90

Collet, with Ring and Screws, for Bolt Cutter Dies 1 inch and smaller, weight, 48 to 55 ounces.... .... $1 70

Collet, with Ring and Screws, for Bolt Cutter Dies 1⅛ to 1½ inch, weight, ounces. 2 20

GRANT'S IMPROVED DIE STOCK AND DIE.

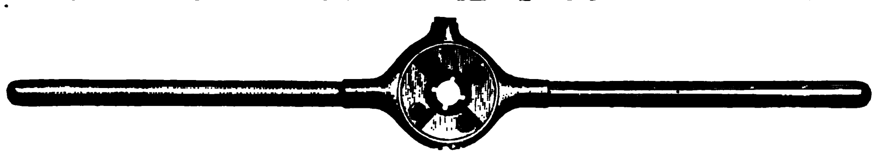


Fig. 890.

No. 0 Die-Stock is designed for jewelers, model makers, and machinists. It is furnished with 6 taps and dies, cutting such threads as may be ordered for 1-16 to ¼ inch sizes, and with a handle and chuck for holding taps. Price, complete in box, $

No. 1 is furnished with 5 taps and dies for cutting rough nuts and iron of the following sizes and number of threads: ¼, 20; 5-16, 18; ⅜, 16; 7-16, 14; ½, 13. Price, complete in box, $16 00.

No. 2 is furnished with 6 taps and dies; sizes and threads as follows: 5-16, 18; ⅜, 16; 7-16, 14; ½, 13; ⅝, 11; ¾, 10. Price, complete in box, $25 00. ¼ inch dies can be furnished for use in this stock if desired.

No. 3 is furnished with 5 taps and dies; sizes and threads as follows: ½, 13; ⅝, 11; ¾, 10; ⅞, 9; 1, 8. Price, complete in box, $32 00.

No. 4 is furnished with 7 taps and dies; sizes and threads as follows: ¾, 10; ⅞, 9; 1 inch, 8; 1⅛, 7; 1¼, 7; 1⅜, 6; 1½, 6. Price, complete in box, $60 00.

Dies and taps will be furnished for threading pipe and fittings as follows: for No. 2 Die Stock, ⅛, ¼, ⅜, ½ inch sizes; for No. 3 Die Stock, ⅛, ¼, ⅜, ½, and ¾ inch sizes; for No. 4 Die Stock, ½, ¾, 1, 1¼ inch sizes.

CHASERS FOR DIE STOCK, BOLT CUTTER, AND PIPE DIES.

Size, inch	¼	5-16	⅜	7-16	½	9-16	⅝	11-16	¾	⅞	1	1⅛	1¼	1⅜	1½
Single Chasers.	$0 40	40	45	50	55	60	65	70	75	85	95	1 00	1 05	1 10	1 15
In Sets of three.....	1 00	1 00	1 10	1 25	1 40	1 55	1 70	1 90	2 00	2 30	2 60	2 75	2 90	3 05	3 15

REECE'S PATENT IMPROVED HAND BOLT CUTTERS OR SCREW PLATES.

Fig. 891.—Top View.

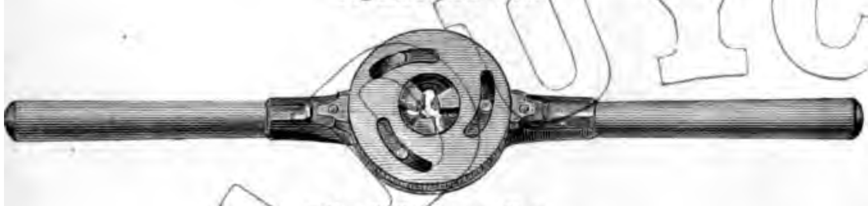


Fig. 892.—Bottom View.

THE LIGHTNING SCREW PLATE.

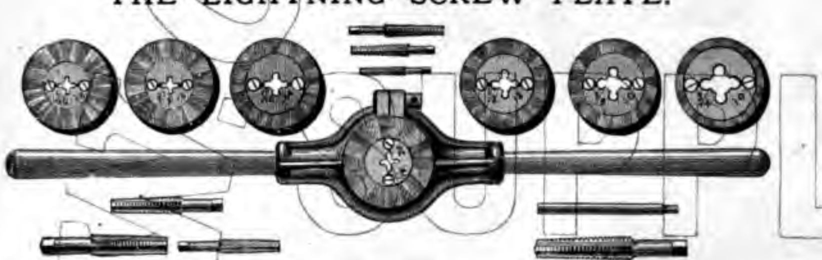


Fig. 893.

The threads are perfectly finished at a single cut. Nuts and bolts always correspond without trying and fitting.

The Dies are not solid, but in two pieces, and adjustable for wear, so as to keep the exact size of the taps notwithstanding long use. When used up they can be replaced from our stock at any time, the plate and holders or collets remaining good.

ASSORTMENT A, STOCK 10 INCH. LONG.

Taper or Plug Taps, Dies, Guides, Stock, etc., for the following sizes, in inches:

3-16, ¼, 5-16, ⅜, 7-16, complete in Case..... $10 00

To above may be added Die for ⅛ inch pipe.. 1 30

ASSORTMENT B, STOCK 23 INCH. LONG.

Taper Taps, Dies, Holders, Stock, etc., of the following sizes, in inches:

¼, 5-16, ⅜, 7-16, ½, ⅝, ¾, in Case........ $25 00

To above may be added 3-16 inch or any intermediate sizes, at list prices below; also the following

PIPE DIES AND HOLDERS.

Size, in inches........	¼	⅜	½	¾
	$2 25	2 65	3 10	4 50

The Pipe Dies are a superior article, adjustable on same principle as the bolt dies.

ASSORTMENT C, STOCK 26 INCH. LONG.

Taper Taps, Dies, Holders, Stock, etc., of the following sizes, in inches:

⅜, 7-16, ½, ⅝, ¾, ⅞, 1, in Case...... ... .. $32 75

To above may be added 3-16, ¼, 5-16 inch, or any intermediate sizes, at list prices given below; also the same assortment of pipe dies and holders as held in size B, given above.

ASSORTMENT D, STOCK 53 INCH. LONG.

Taper Taps, Dies, Holders, Stock, etc., of the following sizes, in inches:

⅞, 1, 1⅛, 1¼, 1⅜, 1½, complete............ $60 00

To above may be added any intermediate sizes at prices given herewith, and also the following

PIPE DIES AND COLLETS IN D PLATES.

Sizes, in inches..............	½	¾	1
	$3 35	4 75	6 00

LIST OF PRICES, SEPARATELY, OF DIES, ETC., FOR LIGHTNING PLATES.

Sizes, in Inches.	Number Threads to inches.	Dies, each without Collets.	Pipe Dies, each, without Collets
¼	18 and 20	$1 00	$1 50
5-16	16 and 18	1 00	
⅜	15 and 16	1 15	1 90
7-16	12, 14 and 16	1 30	
½	12, 13 and 14	1 50	2 35
9-16	12 and 14	1 75	
⅝	10, 11 and 12	1 90	
11-16	11 and 12	2 10	
¾	10	2 35	3 75
13-16	10	2 60	
⅞	9 and 10	3 60	
15-16	9	3 40	
1	8	3 75	5 00
1⅛	7 and 8	4 40	
1¼	7	5 00	5 50
1⅜	6	5 75	5 50
1½	6	7 00	5 50

Sizes B and C. Plate, $4 00; Collets, 75 cents each.

Size D. Plate, $10 00; Collets, $1 00 each.

Unless otherwise ordered, we fit the Lightning Plates with taps and dies for rough iron 1-64th over standard size for all sizes 7-16 inch and under, and for all larger sizes 1-32d over.

Collets for Bit Brace same price as for the Lightning Screw Plate.

No. 1 Screw Plate has five sizes of taps and dies, namely—⅛, 5-32, 3-16, 7-32, and ¼ inch. We furnish the complete set, with tap holder, $5 00.

Prices separately, of Taps and Dies for our No. 1 Plate, which may be ordered with or without Plates, assorted to suit buyers.

Size, in inches.........	⅛	5-32	3-16	7-32	¼
No. of Threads to inch... .	40	36	32	28	24
Hand Taps................	$0 35	35	35	35	35
Dies.................. ...	40	40	40	40	40

Plate alone.... .... $1 15 Tap Holder............... 40 cents.

Other threads and sizes to fit the above Plate will be furnished at reasonable rates.

No. 2 Screw Plate has five sizes of Taps and Dies, namely—¼, 5-16, ⅜, 7-16, and ½ inch. This Plate has our Patent Adjustable Guide attached. Complete Set, $15 00.

Prices separately of Taps and Dies for No. 2 Plate:

Sizes, in inches............	¼	5-16	⅜	7-16	½
No. of Threads to inch.	20	18	16	14	12
Hand Taps................	$0 50	55	60	70	80
Dies......................	1 00	1 00	1 15	1 30	1 50

Plate alone with Patent Adjustable Guide............. .... 6 00

No. 3 Screw Plate can be furnished with all sizes from ½ to 1 inch.

We furnish it complete, with Taps and Dies for the following four sizes, ⅝, ¾, ⅞, and 1 inch. This Plate is also furnished with our Patent Adjustable Guide, $20 00.

Prices separately of Taps and Dies for No. 3 Plate.

Sizes, in inches......	9-16	⅝	11-16	¾	13-16	⅞	15-16	1
No. of Threads to in.	12	11	11	10	10	9	9	8
Hand Taps.........	$0 90	1 00	1 20	1 40	1 60	1 80	2 00	2 25
Dies..............	1 75	1 90	2 10	2 35	2 60	3 00	3 40	3 75

Plate alone with Patent Adjustable Guide.................................. 7 00

LIGHTNING DIES AND TAPS FOR USE IN THE BIT BRACE.

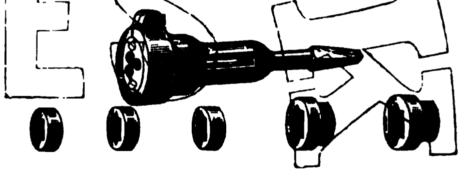


Fig. 894.

Sizes in inches.....................	3-16	¼	5-16	⅜	7-16
Die Tap and Holder, complete........	$2 25	2 25	2 30	2 50	2 60
Die only..........................	1 00	1 00	1 00	1 15	1 15
Tap only..........................	50	50	55	60	70

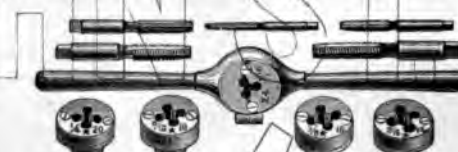


Fig. 895.

Figs. 894 and 895. Complete with taps and dies, sizes, in inches, 3-16, ¼, 5-16, ⅜, 7-16, and including bit brace holder and nut wrenches, in case........................... $14 75

Suited either for straight or crooked work.

Dies are adapted for use in bit brace or in a common stock.

EXPLANATION OF PATENT DIE.

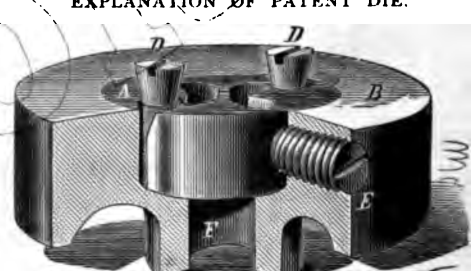


Fig. 896.

A, Die; *B*, Collet; *D*, Taper Screws regulating the cut; *E*, Binding Screws *F*, Guide for Bolts.

In adjusting the die the binding screws *E* are first slackened, and the size required fixed by moving the taper-headed screws *D D* in or out; after which the binding screws *E* are set very tight the last thing.

One of these dies should last two or three years in constant use with proper treatment.

MORSE TWIST DRILL CO.'S SCREW PLATE AND DIES.

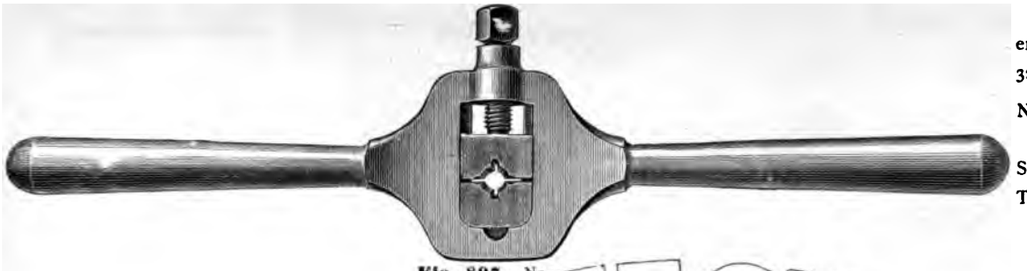


Fig. 897.—No. 1.

For the use of model makers and jewelers, cutting 1/8, 48- , 5-32, 40- , 3-16, 32- , 7-32, 24- , 1/4, 20- .

No. 1—Screw Plate, with 5 pairs of Dies and 5 Taps..... $5 25
Single pair of Dies, each..... 50
The above set complete, including Plate, Dies, Taps, and Adjustable Wrench..... .... 7 25

PATENT ADJUSTABLE TAP WRENCH.

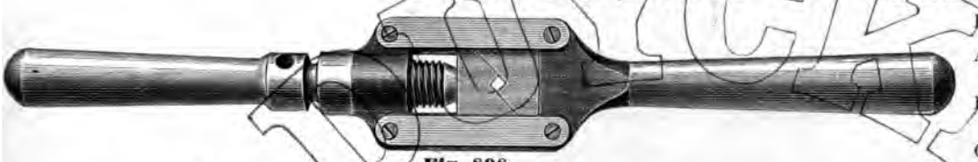


Fig. 898.

A.	Fitting Taps from 1/8 to 1/4 in., inclusive,	$2 25
	Fitting Taps from 1/4 to 5/8 in., "	3 00
	" Reamers " 1/4 to 11/16 " "	
B.	" Taps " 1/2 to 1 " "	4 00
	" Reamers " 3/8 to 1 " "	
C.	" Taps " 7/8 to 1 1/4 " "	5 00
	" Reamers " 11/16 to 1 5/16 " "	

Single Dies, Size A..... $1 00
" " B..... 1 25
" " C..... 1 75
" " D..... 2 00

Screw Plates can have the following sizes of Dies:

Size A..... 1/4 to 5/8 | Size C..... 3/8 to 1
" B..... 1/4 to 7/8 | " D..... 11/16 to 1 1/2

SCREW PLATES WITHOUT DIES.

Size A..... $3 25 | Size C..... $5 00
" B..... 4 00 | " D..... 6 00

WITH ONE, TWO, OR THREE PAIRS OF DIES.

Size A..... $2 50 | Size C..... $4 00
" B..... 3 25 | " D..... 5 00

Dies extra.

SCREW PLATES.

Size A, with 3 pairs of Dies, cutting 1/4, 5/16, 1/8. ..... $5 00
Size B, with 4 pairs of Dies, cutting 5/16, 1/8, 11/32, 3/16..... 8 00
Size C, with 4 pairs of Dies, cutting 1/8, 5/32, 3/16, 7/32, 1/4..... 10 00
Size D, with 4 pairs of Dies, cutting 7/32, 1/4, 9/32, 5/16..... 13 00

PRENTICE DROP FORGED SCREW PLATES AND DIES.

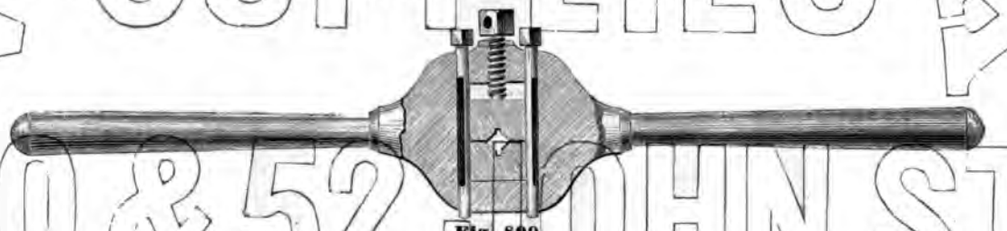


Fig. 899

No. 1—5 Pairs of Dies, inch....	3-16	1/4	5-16	3/8	7-16....	$7 00	Single Dies for No. 1....	$1 00	No. 2....	1 25	No. 3....	2 00
" 2—5 " " "	1/2	9-16	5/8	11-16	3/4	10 00	Screw Plate, alone, No. 1..	3 25	" 2....	5 00	" 3....	6 50
" 3—5 " " "	13-16	7/8	15-16	1	1 1/8	15 00						

MACHINISTS' HAND TAPS.

Fig. 900.—TAPER.

Fig. 901.—PLUG.

Fig. 902.—BOTTOMING.

Manufactured either by Morse Twist Drill Co., Pratt & Whitney, or Prentice, as may be ordered.

V, OR FRANKLIN INSTITUTE SHAPE OF THREAD.

Unless advised to the contrary, we fill orders with V Threads.

Diameter.....	1/4	5/16	3/8	7/16	1/2	9/16	5/8	11/16	3/4	13/16	7/8
Length, inch.....	2 11-16	2 7/8	3 1/8	3 3/8	4 1/8	4 1/2	4 1/4	5 1/8	5 5/8	5 13-16	6
No. of Threads to inch...	16, 18, & 20	16 & 18	14, 16, & 18	14 & 16	12, 13, & 14	12 & 14	10, 11, & 12	11 & 12	10, 11, & 12	10	9 & 10
Each.....	$0 45	50	55	60	70	80	90	1 05	1 20	1 40	1 60
Per Set.....	1 35	1 50	1 65	1 80	2 10	2 40	2 70	3 15	3 60	4 20	4 80

Diameter, inch.....	15-16	1	1 1/8	1 1/4	1 3/8	1 1/2	1 5/8	1 3/4	1 7/8	2
Length, "	6 1/8	6 1/2	6 5/8	6 7/8	7 1/4	7 5/8	8 1/8	8 11-16	9 3-16	9 3/4
No. of Threads to inch...	9	8	7 & 8	7	6	6	5 & 5 1/2	5	4 1/2 & 5	4 1/2
Each.....	$1 80	2 00	2 25	2 60	3 00	3 50	4 20	5 00	5 80	6 70
Per Set.....	5 40	6 00	6 75	7 80	9 00	10 50	12 60	15 00	17 40	20 10

We keep in stock the above 1-32 over size for rough iron.
In ordering, always state exact diameter and thread wanted.
When exact duplicates are wanted, special orders should always be accompanied by a stub with nut fitting same.
Hubs or Master Taps are 25 per cent higher than Nut Taps. State, in ordering, whether for solid or open dies.

MACHINISTS SUPPLIES
50 & 52 JOHN ST
NEW YORK

MACHINE OR NUT TAPS.

Fig. 905.

V or Franklin Institute Shape of Thread. Long Shank—Patent Relieved.

Unless advised to the contrary, we fill orders with V Threads.

Diameter, in.	Length, in.	No. of Threads to inch.	Each.
¼	4½	16, 18, and 20	$0 60
5-16	5⅛	16 and 18	70
⅜	5¾	14 and 16	80
7-16	6⅜	12, 14, and 16	90
½	7	12, 13, and 14	1 00
9-16	7⅝	12 and 14	1 15
⅝	8⅛	10, 11, and 12	1 30
11-16	8⅞	11 and 12	1 45
¾	9½	10	1 60
13-16	10⅛	10	1 80
⅞	11 1-16	9 and 10	2 10
15-16	11 11-16	9	2 40
1	12	8	2 80
1⅛	12⅝	7 and 8	3 20
1¼	13¼	7 and 8	3 70
1⅜	13⅞	6	4 20
1½	14½	6	4 70
1⅝	15⅛	5 and 5½	5 30
1¾	15¾	5	6 00
1⅞	16⅜	4½ and 5	6 80
2	17	4½	7 70

TAPS FOR MACHINE SCREWS.

Fig. 903.—To Fit Brace.

Fig. 904.

Diameter, in.	Wire Gauge No.	No. of Threads to inch.	Each.	Per doz.
7-64	4	36 and 40	$0 35	$4 00
9-64	6	30, 32, 36, and 40	35	4 00
⅛		30, 32, 36, and 48	35	4 00
5-32	8	30 and 32	35	4 00
3-16	10	20, 22, and 24	35	4 00
7-32	12	20, 22, and 24	35	4 00
¼	14	16, 18, 20, 22 and 24	38	4 40
17-64	16	16, 18, 20, and 22	38	4 40
9-32	18	16, 18, and 20	38	4 40
5-16	20	16, 18, and 20	45	5 30
⅜	24	14, 16, and 18	45	5 30

All orders for less than half a dozen of a size at single price.

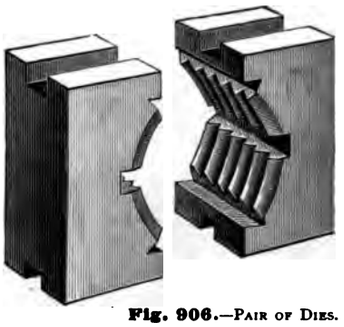


Fig. 906.—Pair of Dies.

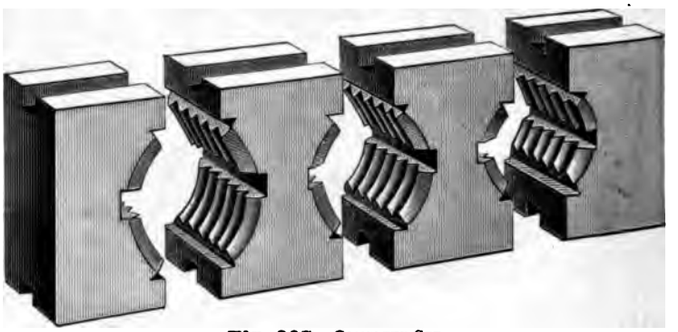


Fig. 907.—Complete Set.

Fig. 908.

Fig. 909.

BLACKSMITHS' EXTRA TAPER AND PLUG TAPS.

PUT UP IN BOXES.

Size, inch.	No. of Threads to inch, Right Hand.	Taps in each Box.	No. of Threads to inch, Left Hand.	Taps in each Box.	Each Tap
⅛	30 and 32	6			$0 30
3-16	24, 26, and 28	6			30
¼	18, 20, 22, 24, and 26	6			30
5-16	16, 18, 20, and 22	6			30
⅜	12, 14, 16, and 18	6			35
7-16	12, 14, 16, and 18	6	14	6	40
½	12, 14, and 16	6	12 and 14	4	40
9-16	12 and 14	6	12	4	50
⅝	10, 12, and 14	6	10 and 12	4	50
¾	7, 8, 9, 10, and 12	6	10 and 12	4	65
⅞	9 and 10	4	9	4	90
1	7, 8, and 9	2	8 and 9	2	1 25
1¼	6, 7, 8, and 9	2	8 and 9	2	1 75
1½	6, 7, and 8	2	6, 7, and 8	2	3 00

EXTRA DIES.

(Figs. 906 and 907.)

For No. 1 or 2 Stock	.....	$12 00
" 3 or 4 "	.....	10 00
" 5 or 5½ "	.....	8 00
" 6 "	.....	6 00
" 7 or 9 "	.....	3 50
" 11 or 15 "	.....	3 00
" 17 or 19 "	.....	2 50
" 21 or 23 "	.....	2 00
" 25, 27, or 32 Stock	.....	2 25
" 33 Stock	.....	1 50
" 34 "	.....	2 00
" 35, 37, 38, 41, or 42 Stock	.....	1 50
" 45 or 47 Stock	.....	2 25
" 49 or 51 "	.....	2 00
" 53 "	.....	1 50

BLACKSMITHS' STOCKS AND DIES.

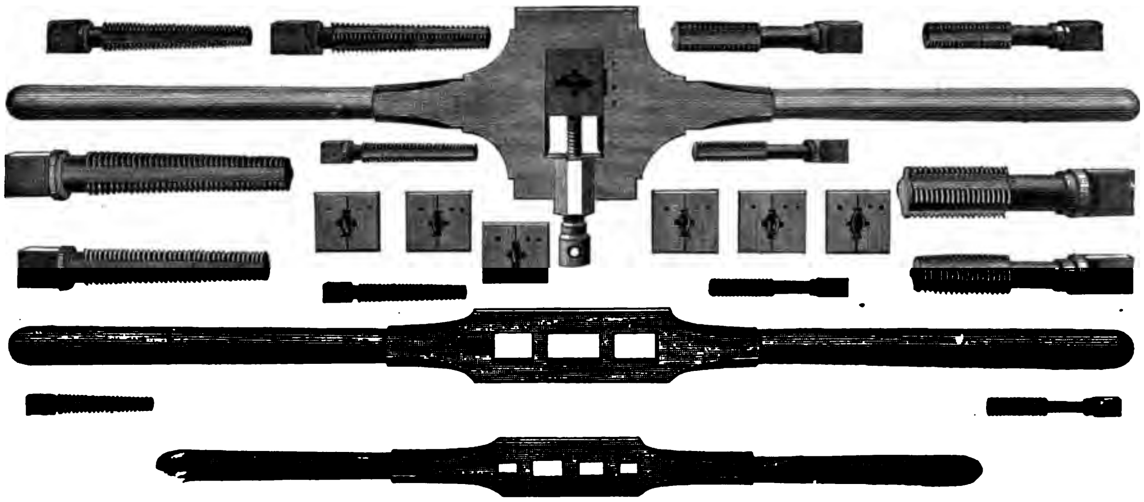


Fig. 910.

No. 1.	Cuts 2 inches to 1 inch Right Hand, 4½ and 7 threads to the inch, 8 Taps and 4 Pairs of Dies " 2 " 1 " Left " 4½ and 7 " " " 8 " " 4 " "	$60 00
No. 2.	Cuts 2 inches to ⅞ inch Right Hand, 4½, 6, 7, and 8 threads to the inch, 8 Taps and 4 Pairs of Dies	60 00
No. 3.	Cuts 1¾ inch to ⅞ inch Right Hand, 6 and 8 threads to the inch, 8 Taps and 4 Pairs of Dies " 1¾ " ⅞ " Left " 6 and 8 " " " 8 " " 4 " "	45 00
No. 4.	Cuts 1¾ inch to ¾ inch Right Hand, 6, 7, 8, and 9 Threads to the inch, 8 Taps and 4 Pairs of Dies	45 00
No. 5.	Cuts 1½ inch to ¾ inch Right Hand, 8 and 9 threads to the inch, 8 Taps and 4 Pairs of Dies " 1½ " ¾ " Left " 8 and 9 " " " 8 " " 4 " "	35 00
•No. 5½.	Cuts 1½ inch to ¾ inch Right Hand, 6, 7, 8, and 9 Threads to the inch, 8 Taps and 4 Pairs of Dies	35 00
No. 6.	Cuts 1½ inch to 1 inch Right Hand, 8 threads to the inch, 4 Taps and 2 Sets of Dies " 1½ " 1 " Left " 8 " " " 4 " " 2 " "	20 00
No. 7.	Cuts 1¼ inch to ⅝ inch Right Hand, 8 and 10 threads to the inch, 6 Taps and 3 Pairs of Dies " 1¼ " ⅞ " Left " 8 " " " 6 " " 3 " "	12 00
No. 9.	Cuts 1¼ inch to ½ inch Right Hand, 8, 10, and 12 threads to the inch, 6 Taps and 3 Pairs of Dies	12 00
No. 11.	Cuts 1¼ inch to ⅝ inch Right Hand, 8 and 10 threads to the inch, 4 Taps and 3 Sets of Dies " 1¼ " ⅞ " Left " 8 " " " 4 " " 3 " "	10 00
No. 15.	Cuts 1¼ inch to ½ inch Right Hand, 8, 10, and 12 Threads to the inch, 5 Taps and 3 Sets of Dies	10 00
No. 17.	Cuts 1 inch to ½ inch Right Hand, 9 and 12 threads to the inch, 6 Taps and 3 Pairs of Dies " 1 " ¾ " Left " 9 " " " 6 " " 3 " "	9 00
No. 19.	Cuts 1 inch to ⅜ inch Right Hand, 9, 12, and 14 threads to the inch, 6 Taps and 3 Pairs of Dies	9 00
No. 21.	Cuts 1 inch to ½ inch Right Hand, 9 and 12 threads to the inch, 4 Taps and 3 Sets of Dies " 1 " ¾ " Left " 9 " " " 4 " " 3 " "	6 00
No. 23.	Cuts 1 inch to ⅜ inch Right Hand, 9, 10, and 14 threads to the inch, 3 Taps and 3 Sets of Dies	5 00
No. 25.	Cuts ¾ inch to ⅜ inch Right Hand, 10 and 12 threads to the inch, 6 Taps and 3 Pairs of Dies " ¾ " ½ " Left " 10 " " " 6 " " 3 " "	6 50
No. 27.	Cuts ¾ inch to ⅜ inch Right Hand, 10, 12, and 16 threads to the inch, 6 Taps and 3 Pairs of Dies	6 50
No. 32.	Cuts ¾ inch to ⅜ inch Right Hand, 10 and 14 threads to the inch, 4 Taps and 4 Sets of Dies " ¾ " ⅜ " Left " 10 and 14 " " " 4 " " 4 " "	5 00
No. 33.	Cuts ¾ inch to ½ inch Right Hand, 10 threads to the inch, 2 Taps and 2 Sets of Dies " ¾ " ½ " Left " 10 " " " 2 " " 2 " "	4 00
No. 34.	Cuts ¾ inch to 5/16 inch Right Hand, 10, 12, and 16 threads to the inch, 3 Taps and 3 Sets of Dies	4 50
No. 35.	Cuts ¾ inch to ⅜ inch Right Hand, 10 and 14 threads to the inch, 2 Taps and 2 Sets of Dies	4 00
No. 37.	Cuts ⅝ inch to 3/16 inch Right Hand, 14, 18, and 22 threads to the inch, 6 Taps and 3 Sets of Dies	4 25
No. 38.	Cuts ⅝ inch to 5/16 inch Right Hand, 12 and 18 threads to the inch, 6 Taps and 3 Sets of Dies " ⅝ " 7/16 " Left " 12 " " " 6 " " 3 " "	4 50
No. 41.	Cuts ½ inch to ⅛ inch Right Hand, 16, 20, and 26 threads to the inch, 6 Taps and 3 Sets of Dies	3 25
No. 42.	Cuts ½ inch to 3/16 inch Right Hand, 14 and 20 threads to the inch, 6 Taps and 3 Sets of Dies " ½ " 5/16 " Left " 14 " " " 6 " " 3 " "	3 50
No. 45.	Cuts ⅝ inch to 5/16 inch Right Hand, 12 and 16 threads to the inch, 6 Taps and 3 Pairs of Dies " ⅝ " 7/16 " Left " 12 " " " 6 " " 3 " "	5 50
No. 47.	Cuts ⅝ inch to ¼ inch Right Hand, 12, 14, and 18 threads to the inch, 6 Taps and 3 Pairs of Dies	5 50
No. 49.	Cuts ½ inch to ¼ inch Right Hand, 14 and 18 threads to the inch, 6 Taps and 3 Pairs of Dies " ½ " 5/16 " Left " 14 " " " 6 " " 3 " "	4 50
No. 51.	Cuts ½ inch to 3/16 inch Hight Hand, 14, 18, and 22 threads to the inch, 6 Taps and 3 Pairs of Dies	4 50
No. 53.	Cuts 5/16 inch to 1/16 inch Right Hand, 16, 20, 24, and 32 threads to the inch, 4 Taps and 4 Sets of Dies	2 75

Extra Stocks and Dies manufactured expressly for us, and are complete with Plug and Taper Taps, Wrenches, etc.

No. 2.	Extra, 1⅛ to 2 inches, Right Hand, with 12 Taps and 6 Sets of Dies	$150 00
" 5½,	" 1½ to ⅞ " " " " 12 " " 6 " "	75 00
" 9,	" 1¼ to ¼ " " " ' 14 " " 7 " "	50 00
" 19,	" 1 to ¼ " " " " 12 " " 6 " "	35 00
" 27,	" ¾ to ¼ " " " " 8 " " 3 " "	15 00

BLACKSMITHS' TONGS.

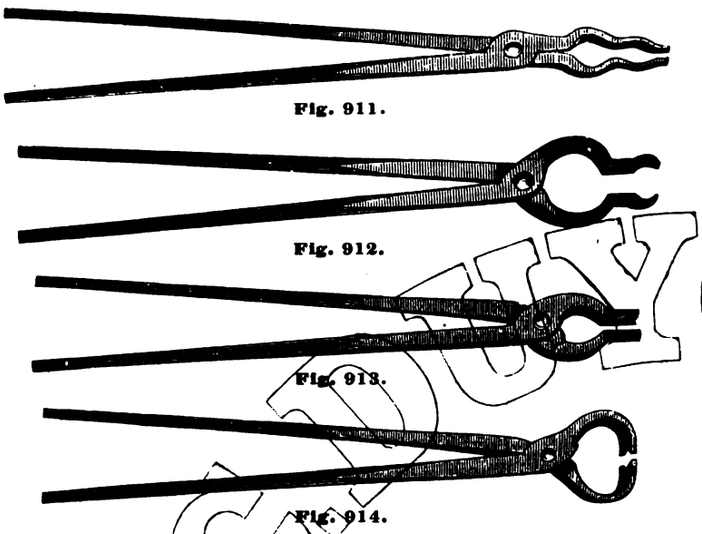


Fig. 911.

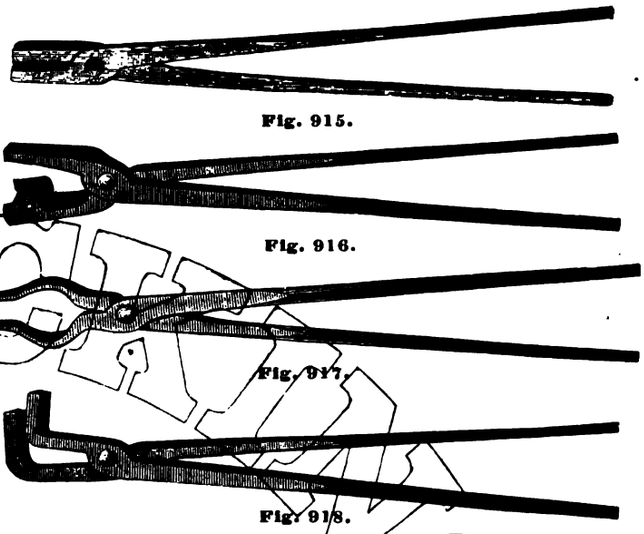


Fig. 915.

Fig. 912.

Fig. 916.

Fig. 913.

Fig. 917.

Fig. 914.

Fig. 918.

Blacksmiths' Tongs, per pound..... $0 25

BLACKSMITHS' PINCERS.

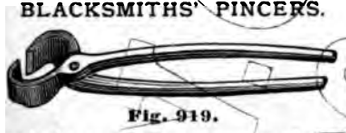


Fig. 919.

12 inch, per dozen..... $9 00
14 " " 14 50

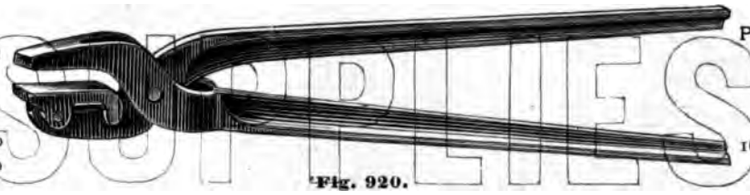


Fig. 920.

PATENT SWIVEL STEEL JAW TONGS.

To hold irregular pieces.

10 and 18 inch..... $1 00

Countersinks. FLATTERS. FULLERS. SWAGES. Hardies.

Fig. 921.

Fig. 922.

Fig. 923.

Fig. 924. Top.

Fig. 925. With Nose.

Fig. 926. Bottom.

Fig. 927. Top.

Fig. 928. Bottom.

Fig. 929.

PUNCH. CREASER. Set Hammer.

Fig. 930.

Fig. 931.

Fig. 932.

CHISELS—With Eye.

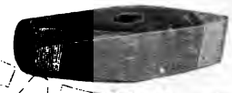


Fig. 933.—Cold.

Fig. 934.—Hot.

HEADING TOOLS—Round and Square.

Fig. 935.

CUPPING TOOLS.

Fig. 936.—A.

Fig. 937.—B.

Swages, Fullers, Flatters, Hot and Cold Chisels, Hardies Creasers, etc., per lb..... $0 50

Top and Bottom Collar Swages.

Fig. 938.

Fig. 939.

Per pound..... $0 75

KLIP SWAGES.

Fig. 940.

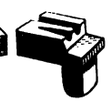


Fig. 941.

BENDING TOOLS.

Fig. 942.

Each, $3 00

Fig. 943.

Each, $4 00

V TOOLS.

Fig. 944.

Each, $2 50

Nail Pointing Anvil.

Fig. 945.

Per dozen, $18 00

ORDINARY SWAGE BLOCK OR SOW.

Fig. 946.

Size, 14 × 14 inches.....$10 00
With Iron Stand..... 20 00

SINGLE GEARED TIRE BENDER.

Fig. 947.

No.	1	2
Bends	2 × ½	3 × ⅝
Each	$12 00	17 50

PATENT TIRE BENDER.

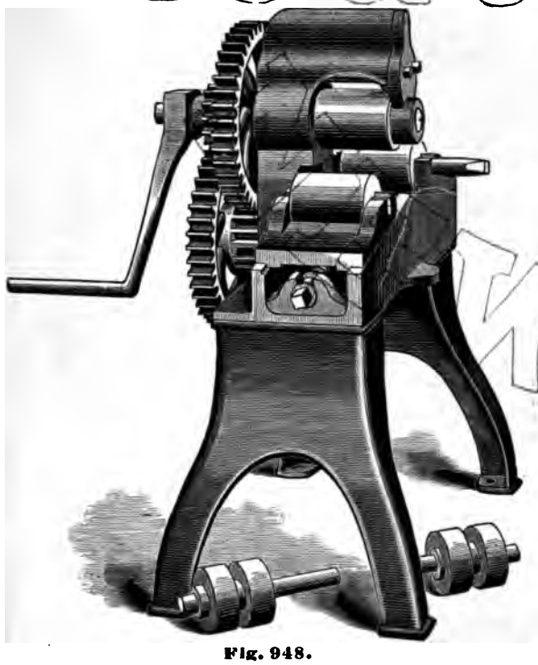


Fig. 948.

No. 1, Bends ⅝ × 2½, each.....$45 00
" 2, " 1 × 4 " 75 00

COMMON TIRE BENDER.

Fig. 949.

No. 00. For Light Work.....$4 50
" 0. " " " 7 50

COAL AND WATER BOXES.

Fig. 950.

These are made with separate compartments, and of any desired size, to fit any forge.

Each, $8 00 to $20 00, according to size.

BENDING CONES.

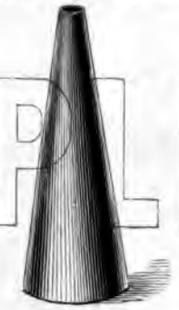


Fig. 951.

For trueing Hub Bands and other Rings, from 4½ to 16 inches in diameter.

For Light Work.....$12 00
" Heavy " 15 00

TIRE UPSETTING MACHINE.

Fig. 952.

These machines will shrink tires of any size, and can also be used for upsetting axles or any kind of forgings.

No. 1. Light Wagon or Carriage Work, $25 00
" 2. Heavy Work of all kinds..... 40 00

REVOLVING SWAGE BLOCKS.

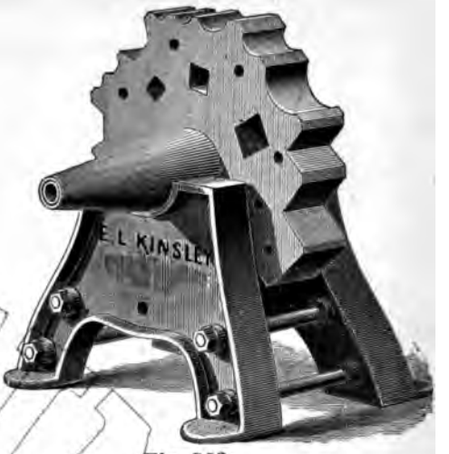


Fig. 953.

Size, inch.,	14	16	18	20	22
	$20 00	24 00	28 00	33 00	38 00

DOUBLE GEARED TIRE BENDER.

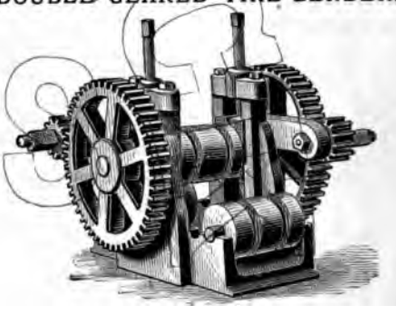


Fig. 954.

No.	3	4	5
Bends	3½ × ¾	6 × 1	6 × 1¼
Each	$20 00	30 00	40 00

TIRE PLATES.

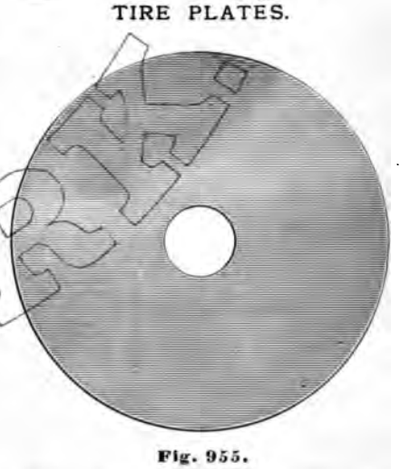


Fig. 955.

An Iron Tire Plate is an absolute necessity in a wagon or carriage shop for setting Tires, straightening and trueing Forgings, etc., etc.

Plates, 5 feet in diameter,	1½ in. thick,	$40 00
" 5 " "	1⅝ "	45 00
" 5 " "	1¾ "	50 00

5-2, 5-4, 5-6, made to order at proportionate prices.

S. SUPPLIES 50 & 52 JOHN ST. NEW YORK

NAPPING HAMMER. **SMITH'S SLEDGE.** **STRIKING SLEDGE.** **FLOGGING HAMMER.** **TURNING SLEDGE.**

Fig. 956.

2 to 5 lbs.

Fig. 957.

Straight or Cross Pene. 6 to 18 lbs.

Fig. 958.

6 to 20 lbs.

Fig. 959.

Fig. 960.

Solid Steel, per lb ..... 40 to 50 cents. Steel Faced, per lb..... 20 cents.

Fig. 961.

SMITH'S HAND HAMMER.

BLACKSMITH HAMMERS WITH HANDLE.

Weight, oz.	8	12	16	Pound,	1¼	1½	1¾	2	2¼	2½	3	3½
Polished, per dozen	$4 00	5 50	7 00		7 50	9 00	10 50	12 00	13 50	15 00	18 00	21 00

Black, not handled, 2 to 5 lbs., at 50 cents per lb.

FARRIERS' HAMMER.

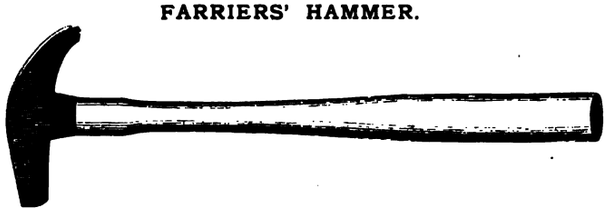


Fig. 962.

Per dozen..... $24 00

TURNING HAMMER.

Fig. 963.

Full Polished, 2 to 3 lbs., per dozen.....$36 00
Half " 2 to 3 " " 30 00

BUTTRESS.

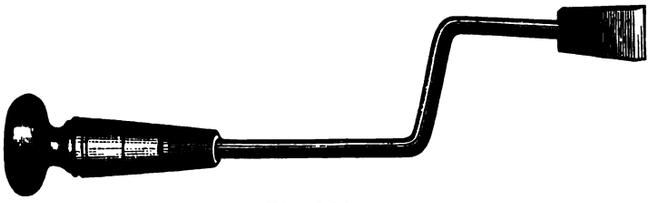


Fig. 964.

Japanned, each..... $0 80 Polished, each..... $1 00

FARRIER'S BOX.

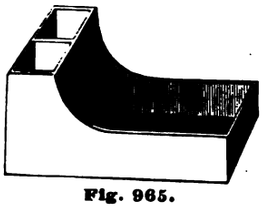


Fig. 965.

Each..... $3 00

STAMP PUNCH.

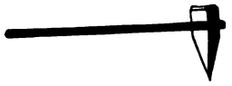


Fig. 966.

Each..... $1 50

BUFFERS.

Fig. 967.

Each.... $2 00

PRITCHEL.

Fig. 968.

Per dozen.... $12 00

KNIVES.

Fig. 969.

Per dozen..... $7 50

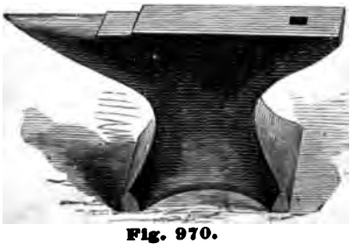


Fig. 970.

ANVILS.

P. Wright, Imported, per lb..... 15 to 18 cents
Eagle, American..... " .....over 100 lbs. 11

EAGLE. Less than 100 lbs.

No.	0	1	2	3	4	5	6	7	8	9
Weighing about, lbs.	10	15	20	30	40	50	60	70	80	90
Each	$3 50	4 25	5 00	5 50	6 50	7 50	8 00	9 00	10 00	10 50

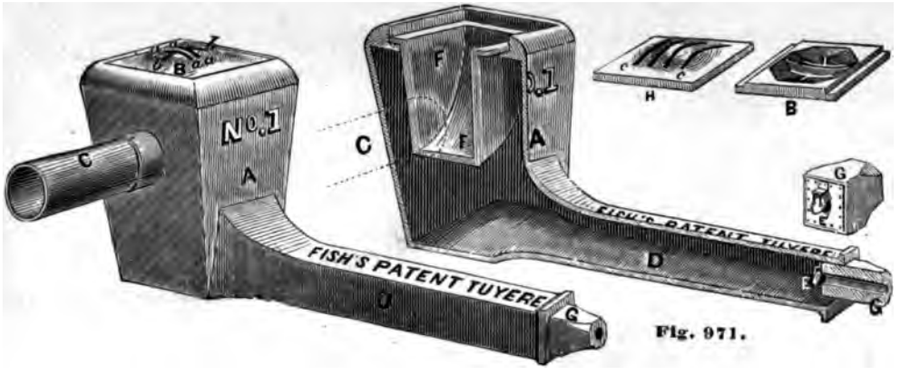


Fig. 971.

FISH'S PATENT CHAMPION TUYERE IRONS.

(Fig. 971.)

No. 1. Large Size, for Machine and General Forging.....$15 00
" 2. Medium Size, for ordinary Blacksmithing 12 50
" 3. Small Size, for Coachsmithing and Horseshoeing..... 10 00

SQUARE PATTERN TUYERE.

Fig. 972.

Each.....$1 25

HARRIS TUYERE.

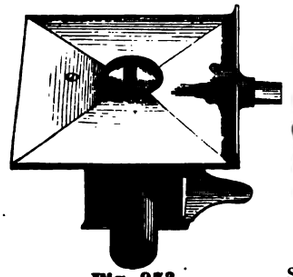


Fig. 973.

Each.....$5 00

UPRIGHT TUYERE.

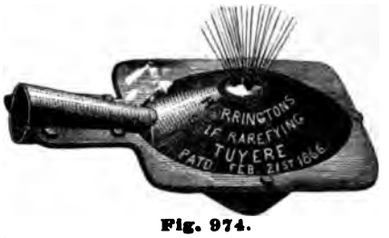


Fig. 974.

Size, inch.....	1	2	3
Harrington's Upright..	$4 50	5 50	6 50

WATER TUYERE.

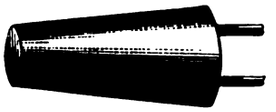


Fig. 978.

Each.....$8 00

DUCK-NEST TUYERE.

Fig. 979.

Each.....$2 00

IMPROVED TUYERE IRONS.

Since the introduction of this Tuyere Iron, it is superseding all others, as it allows a greater variety of blast, and is more easily freed of cinders and ashes than any other.

Each.....$5 00

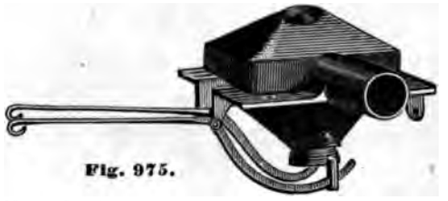


Fig. 975.

Common Square Tuyere, No. 1, Small..... $3 00
" " " " 2, Large..... 4 50

Fig. 976.

BAYLISS' FORGE AND TUYERE.

No. 1, 28 inches [] the Tuyere without water.....$25 00
No. 2, 36 inches [] the Tuyere with Water, Pipes, and Tank... 35 00
No. 3, for heavy work, with Water, Pipes, and Tanks..... 40 00
No. 4, for very heavy work, with Water, Pipes, and Tanks.. 50 00
Horseshoer's Forge, with Hood....$35 00

VULCAN TUYERE.

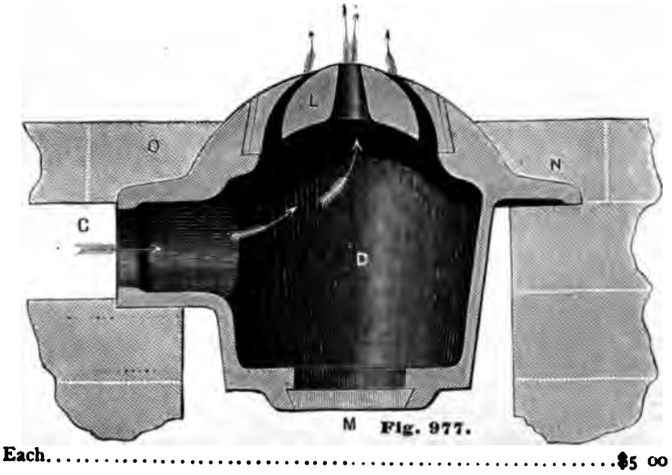


Fig. 977.

Each.....$5 00

ROOTS' IMPROVED BLACKSMITH TUYERE.

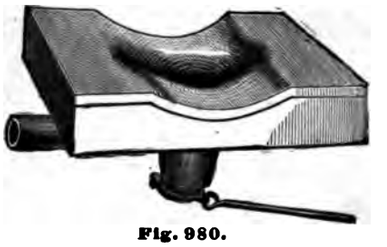


Fig. 980.

No. 1—Adapted to Small Portable Forges and Light Work.....$5 00
" 2— " Larger Forges, for Gunsmiths, etc..... 7 00
" 3— " Ordinary Smith Shops, Carriage Shops, and for general Smithing purposes..... 9 00
" 4— " Machine Shops and Heavy Forging..... 12 00
" 5—For unusually Heavy Work and Special Purposes.....

CHAPMAN'S IMPROVED WATER BACK TUYERE.

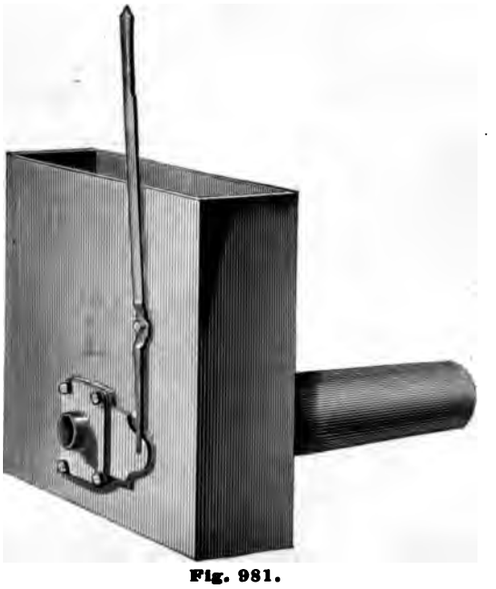


Fig. 981.

With Air Gate and Lever.....$30 00
Without Air Gate and Lever..... 25 00

THE EMPIRE FORGE.

Fig. 982.—With Hood and Doors Complete. Geared for Hand.

Fig. 983.—With Hood and Doors Complete. Geared for Power.

Fig. 984.—Without Hood or Doors. Geared for Hand.

Fig. 985.—No. 10. Weighing only 90 lbs.

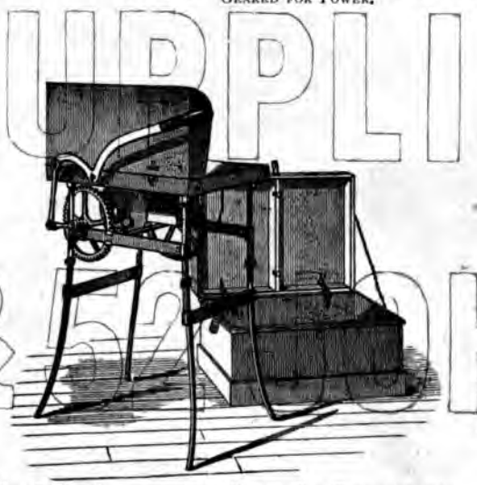


Fig. 986.—No. 15, or Army Forge. For Transportation.

Fig. 987.—On Wheels.

Fig. 988.—Bench, with Hood.

EMPIRE FORGES.

WITH HOOD AND DOORS COMPLETE.

No.	Fan, in.	Diam.	Height	Weight, lbs.	Each.	Weight.	Each.
		GEARED FOR HAND.				GEARED FOR POWER.	
0	7	1—10	3—10	160	$35 00	175 lbs.	$40 00
1	7	2— 1	4— 0	170	40 00	185 "	45 00
2	8	2— 3	4— 3	270	50 00	290 "	55 00
3	8	2— 7	4— 6	285	60 00	300 "	65 00

WITHOUT HOOD OR DOORS.

No.	Fan, in.	Diam.	Height	Weight, lbs.	Each.	Weight.	Each.
		GEARED FOR HAND.				GEARED FOR POWER.	
0	7	1—10	3—4	130	$30 00	145 lbs.	$35 00
1	7	2— 1	3—6	140	35 00	155 "	40 00
2	8	2— 3	3—9	230	45 00	250 "	50 00
3	8	2— 7	4—0	245	55 00	285 "	60 00

MOUNTED ON WHEELS.

No.	Fan, in.	Diam.	Height	Weight, lbs.	Each.	No.	Fan, in.	Diam.	Height	Weight, lbs.	Each.
		WITH HOOD AND DOORS COMPLETE.						WITHOUT HOOD OR DOORS.			
0	7	1—10	3—10	180	$40 00	0	7	1—10	3—4	150	$35 00
1	7	2— 1	4— 0	190	45 00	1	7	2— 1	3—6	160	40 00
2	8	2— 3	4— 3	290	55 00	2	8	2— 3	3—9	250	50 00
3	8	2— 7	4— 6	305	65 00	3	8	2— 7	4—0	265	60 00

No. 15.—ARMY FORGE.

7 inch Fan, 18x16 Fire Pan, 30 inches high, weighs 75 lbs., packed in iron-bound Chest..... $50 00

No. 10.—WROUGHT IRON LEGS. Geared for Hand.

7 inch Fan, 1 foot 8 inches in Diameter, Height, 3 feet 2 inches high, weighs 90 lbs..... $27 00

BENCH, WITH HOOD.

The Hood is only set on the Forge, and not attached to it. It may be removed at pleasure.

Without Top, 7 inch Fan, 12x17 inch., 15 inch. high, weighs 50 lbs..... $20 00
With " or Hood, 7 " 12x17 " 28 " " 70 " 30 00

PATTERSON'S PATENTS.

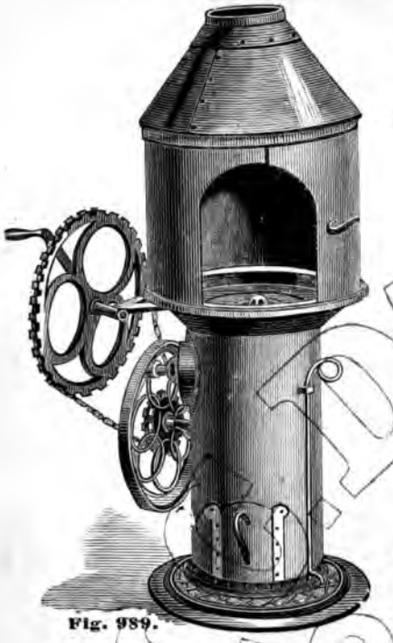


Fig. 989.

FORGE WITH HOOD FOR HAND POWER.

(Fig. 989.)

No. 1. Diameter, 22 in., Height, 27 in., $48 00
" 2. " 29 " " 29 " 65 00

FORGE WITHOUT HOOD FOR HAND POWER.

(Fig. 990.)

No. 1. Diameter, 22 in., Height, 27 in., $40 00
" 2. " 29 " " 29 " 55 00

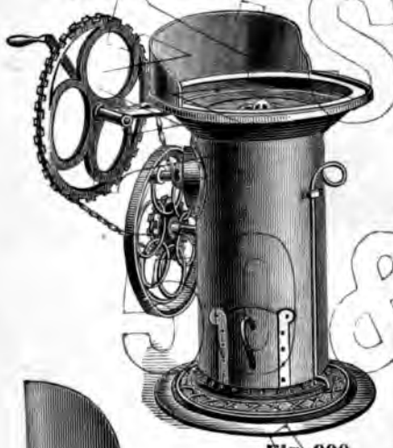


Fig. 990.

FORGE WITH COUNTERSHAFT.

(Fig. 991.)

No. 1. Without Hood..... $35 00
" 2. " " 47 50
" 1. With Hood..... 43 00
" 2. " " 57 50

COUNTERSHAFT.

No. 1..... $6 00
" 2..... 9 00

DETACHED HAND WHEEL.

No. 1..... $6 00
" 2..... 9 00

Fig. 991.

PATTERSON'S FORGES WITHOUT BLOWERS.

(Figs. 992 and 993.)

The Tuyere is adjustable and can deliver a blast 3 inches in diameter without in the least clogging with clay. This can not be accomplished with any other Forge without infringing on Patterson's Patent.

No.
1. Boiler Makers' Rivet Fire, weight 80 lbs., without Canopy..... $15 00
The same with Canopy..... 23 00
2. Tool Repairers' Fire, weight 150 lbs. without Canopy..... 24 00
The same with Canopy..... 34 00
3. Horseshoeing Fire, weight 180 lbs., without Canopy..... 32 00
The same with Canopy..... 44 00
4. Carriage Makers' Fire, weight 250 lbs., without Canopy..... 41 00
The same with Canopy..... 56 00
4½. For Machine Shops, weight 500 lbs. without Canopy..... 54 00
The same with Canopy..... 70 00
5. Capacity for Heavy Work, weight 500 lbs., without Canopy..... 65 00
5½. Forge for Railroads, weight 650 lbs. without Canopy..... 77 00
6. Superior Capacity, weight 750 lbs., without Canopy..... 83 00

GRATE FORGE FOR HARD COAL.

(Fig. 994.)

No. 1. Weight 165 lbs..... $34 00
" 2. " 200 " 44 00
" 3. " 270 " 56 00
" 4. " 540 " 70 00

Fig. 992.—EXTERNAL.

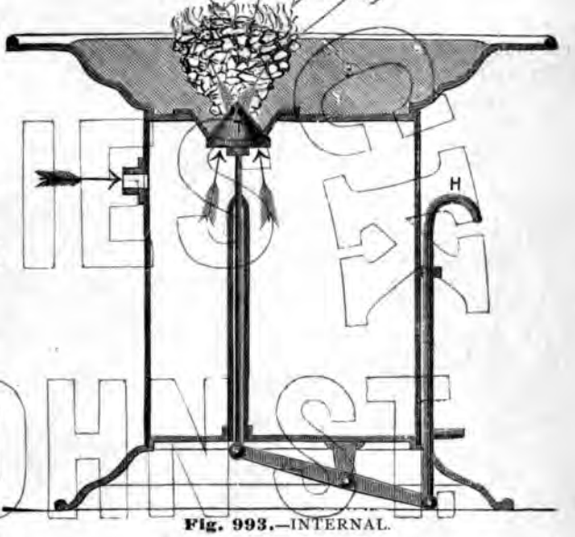


Fig. 993.—INTERNAL.

Fig. 994.

DUNCAN SUPPLIES & SERVICE J&R 252 JOHNST

ROOT'S PATENTS.

NEW "LETTER A."

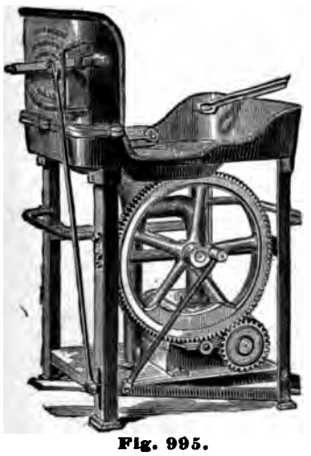


Fig. 995.

The hearth is only 15 x 20 inches, and the height of same only 24 inches. Being so small, it is easily carried or transported from place to place, or can be easily taken on scaffolds, bridges or roofs; and being low, and the principal weight near the bottom, it can scarcely be upset.

New "Letter A".....$43 00

We invite the special attention of Blacksmiths to the advantages of our little Hand Blower for Smiths' Shops.

Its great durability, being made of iron. Economy of room—only occupying about 18 inches square. Producing a force blast that can be varied instantly from the slightest breath to the strongest blast. Great saving of coal. More work can be done with the Blower than with the bellows. Operated more easily and pleasantly than the bellows; can be run by hand or power, and connected with any Tuyere.

ROTARY HAND BLOWERS, FOR BLACKSMITHS' FIRES.

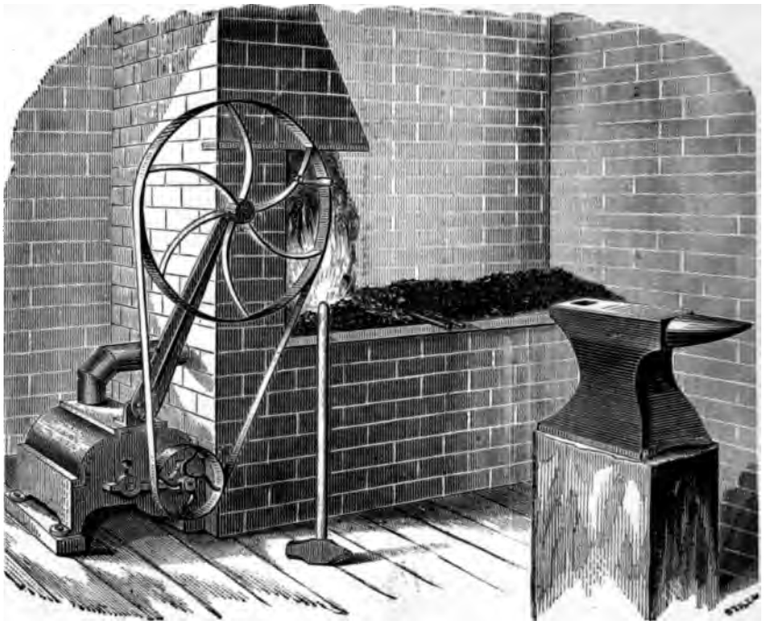
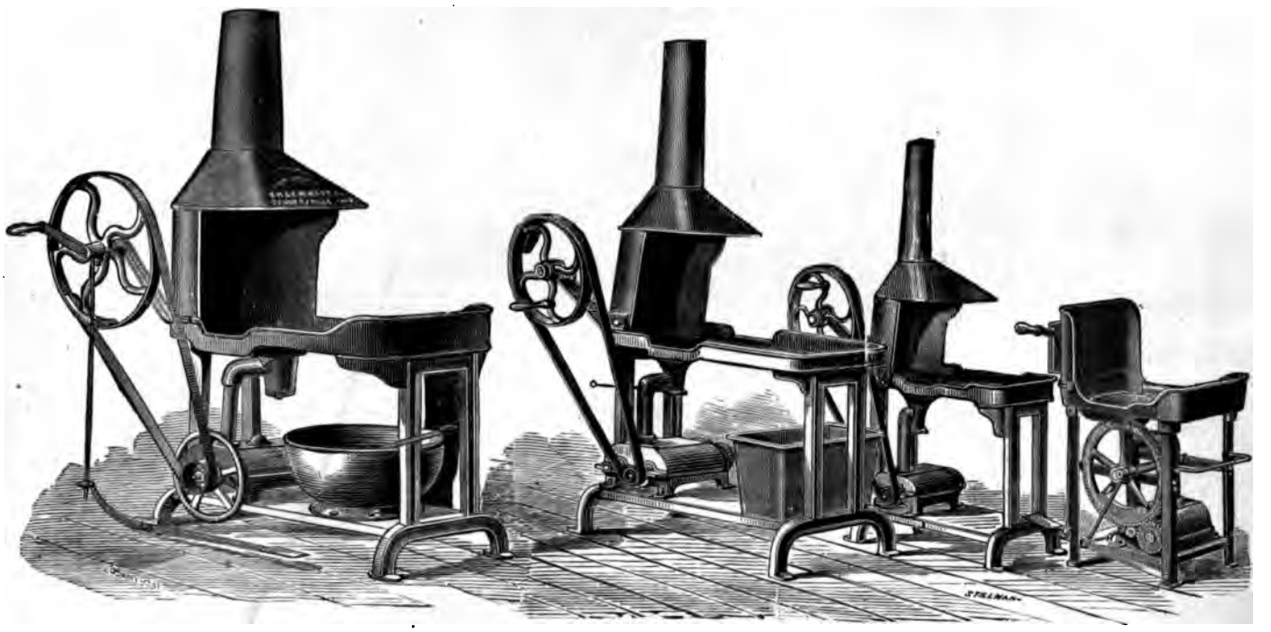


Fig. 996.

No. ½. Blacksmith Hand Blower, will furnish ample blast for one ordinary fire by hand, or by power.....$36 00
" 1. " " " " " " a large fire by hand, or two by power..... 48 00
" 2. " " " " " " one largest class fire by hand, or three by power..... 75 00
" 3. " Power " " blast for five fires.....138 00

IMPROVED PORTABLE FORGE.



No. 4. No. 3. No. 2. No. 1.

Fig. 997.

No. 1 Size—Suitable for Boiler repairs and outside jobbing, also for Plumbers and Gas Fitters. Circular Hearth, 14 inches diameter. Height 24 inches. Weight, complete, 85 pounds. Blast, equal to 24 inch bellows.....$45 00

" 2 Size—Suitable for Locksmiths, Platers, Braziers, Boiler Shops, for heating rivets, and light work. Hearth, 14 x 24 inches. Height, 24 inches, weight, with Blower complete, 203 lbs. Blast equal to 30 inch bellows..... 54 00

" 3 Size—Suitable for Machine Shops, Boiler Shops, Bridge Building, Steamships, Steamboats, Ferryboats, Gunsmiths, Jewelers, etc. Also for setting up new Machinery, and for Farms and Plantations, etc. It is especially adapted to Army and Navy purposes, on account of its Completeness, Efficiency, Portability, etc. Hearth, 20 x 30 inches. Height to top of chimney, 4 feet. Weight, with Blower and Slack Tub complete, 309 lbs. Blast equal to 36 inch bellows..... 77 00

" 4 Size—Suitable for common Blacksmith Shops, Carriage Shops, and general Smithing purposes. Hearth, 30 x 42 inches. Height to top of chimney, 5 feet. Weight, with Blower and Slack Tub complete, 482 lbs. Blast equal to 40 inch bellows.....110 00

" 5 Size—Suitable for Machine Shops and Heavy Forgings. Hearth, 36 x 60 inches. Height to top of chimney, 6 feet. Weight, with Blower complete, 1215 pounds. Blast equal to 50 inch bellows.....170 00

KEYSTONE FORGES.

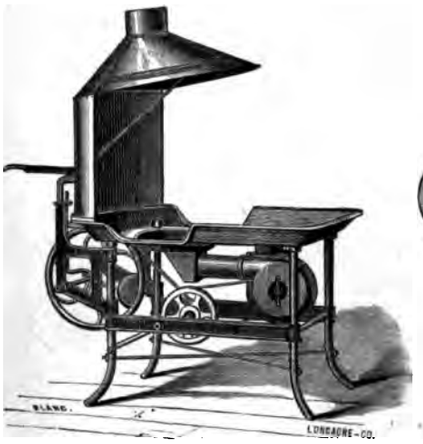


Fig. 998.—Forge No. 3, Lever and Hood.

Fig. 999.—Forge No. 1.

Fig. 1000.—Power Forge No. 6.

Fig. 1001.—Jewelers' Forge No 2, Close Hood.

BLACKSMITHS' FORGES.

ROTARY FORGES.

	Height, in.	Size of Fire Pan, in.	Weight, lbs.	Diam. of Fan, in	Each.
No. 1 —.....	30	17x20	85	6	$27 00
" 1 —Chain Gear.....	30	17x20	95	6	30 00
" 1 —With Hood.....	30	17x20	88	6	30 00
" 1 — " " Chain Gear.....	30	17x20	98	6	33 00
" 2 —.....	30	20x24	98	8	35 00
" 2 —Chain Gear.....	30	20x24	108	8	38 00
" 2 —With Hood.....	30	20x24	104	8	40 00
" 2 — " " Chain Gear.....	30	20x24	114	8	43 00
" 2½—.....	25	21x27	130	8	45 00
" 2½—Chain Gear.....	25	21x27	140	8	48 00
" 2½—With Hood.....	25	21x27	140	8	50 00
" 2½— " " Chain Gear.....	25	21x27	150	8	53 00
" 3 —.....	25	24x30	140	9	50 00
" 3 —Chain Gear.....	25	24x30	150	9	53 00
" 3 —With Hood.....	25	24x30	150	9	56 00
" 3 — " " Chain Gear.....	25	24x30	160	9	59 00

STATIONARY BLAST FORGES.

Stationary Blast Forge.....	25	40x40	160		30 00
" " " with Slack Tub.....	25	40x40	200		35 00

FARRIERS' FORGES.

Farriers' Forge	25	30	320	9	50 00
" " Chain Gear.....	25	30	330	9	53 00
" " with Hood.....	25	30	350	9	60 00
" " " Chain Gear.....	25	30	360	9	63 00

LEVER FORGES.

	Height, in.	Size of Fire Pan, in.	Weight, lbs.	Diam. of Fan, in.	Each
No. 2½—With Lever.....	25	21x27	140	8	50 00
" 2½— " " Chain Gear.....	25	21x27	150	8	53 00
" 2½— " " and Hood.....	25	21x27	150	8	55 00
" 2½— " " " Chain Gear...	25	21x27	160	8	58 00
" 3 — " "	25	24x30	150	9	60 00
" 3 — " " Chain Gear	25	24x30	160	9	63 00
" 3 — " " and Hood.....	25	24x30	160	9	66 00
" 3 — " " " Chain Gear...	25	24x30	170	9	69 00
" 4 —Chain Gear.....	25	30x40	195	9	70 00
" 4 —With Hood, Chain Gear.....	25	30x40	210	9	78 00

POWER FORGES.

No. 2½—Power, with Hood.....	25	21x27	140	8	50 00
" 2½— " " " Chain Gear.....	25	21x27	150	8	52 00
" 3 — " " "	25	24x30	150	9	60 00
" 3 — " " " Chain Gear	25	24x30	160	9	62 00
" 4 — " " "	25	30x40	210	9	75 00
" 5 —Oval.....	22	36x54	550	9	145 00
" 6 —Circular.....	22	54x54	600	9	160 00

JEWELERS' FORGES.

No. 1—With Close Hood.....	30	17x20	94	6	34 00
" 1— " " " Chain Gear...	30	17x20	104	6	37 00
" 2— " " "	30	20x24	110	8	45 00
" 2— " " " Chain Gear.....	30	20x24	120	8	48 00

RIVETING FORGES.

No. 1—Chain Gear	30	17x20	95	6	30 00
" 2— " "	30	20x24	108	8	38 00
Riveting Forge, Chain Gear			200	9	75 00

NAVY AND MINERS' FORGES.

Miners' Forge, Chain Gear.....		16x22	100	6	50 00
Navy " " "	22	22x27	200	9	80 00

Fig. 1002.

QUEEN'S PATENT PORTABLE FORGE AND BELLOWS.

BLACKSMITHS' FORGES.

No. 0 — 95 lbs., 1 foot 8 inches in Diameter,	3 feet 10 inches high.....		$26 00
" A —135 " 1 " 9 " "	3 " 11 " "		32 00
" 1 —205 " 2 " " "	4 " 2 " "		42 00
" 1½—245 " 2 " 3 " "	4 " 5 " "		51 00
" 2 —335 " 2 " 6 " "	4 " 8 " "		63 00
" 3 —445 " 3 " " "	4 " 10 " "		78 00

JEWELERS' FORGES.

No. 0 —105 lbs.....	28 00
" A —145 "	34 00
" 1 —230 "	44 00
" 1½—280 "	54 00
" 2 —385 "	65 00

The No. 0 Forges are made without slides for closing, and without Water Troughs.

Fig. 1003.

ROOT'S PATENT FORCE BLAST ROTARY BLOWERS.

FOR FOUNDRIES, BLACKSMITH SHOPS, VENTILATING BUILDINGS, MINES, ETC.

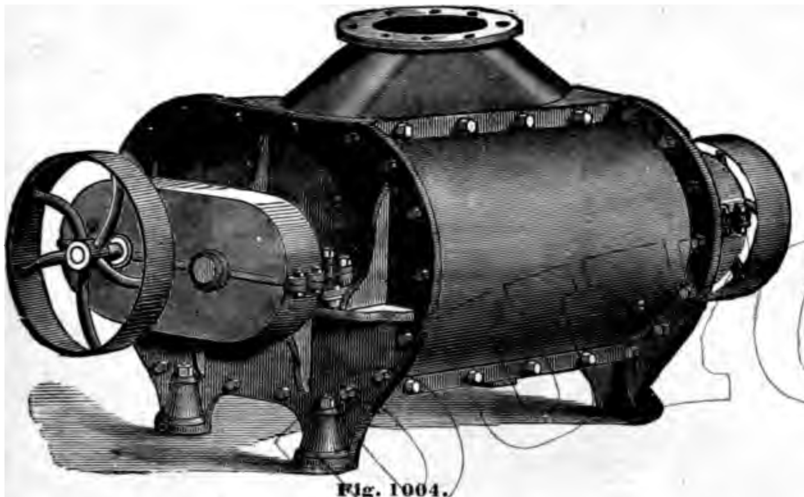


Fig. 1004.

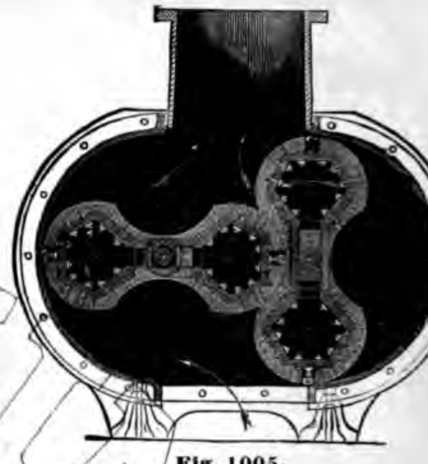


Fig. 1005.

No. 1. Foundry Blower—Adapted to a cupola 18 to 24 inches inside the lining, discharges 3 cubic feet per revolution $200 00

Revolutions per minute	
200	will melt 1 ton iron per hour.
250	" " 1¼ " "
300	" " 1½ " "
100	will furnish blast for 5 fires.
125	" " 6 "
175	" " 8 "
200	" " 10 "

No. 2. Foundry Blower.—Adapted to a cupola 24 to 30 inches inside the lining, discharges 5 cubic feet per revolution $280 00

Revolutions per minute	
175	will melt 1½ tons iron per hour.
225	" " 2 " "
275	" " 2½ " "
100	furnish blast for 8 fires.
125	" " 10 "
150	" " 12 "
175	" " 15 "

No. 3. Foundry Blower—Adapted to a cupola 30 to 36 inches inside the lining, discharges 7½ cubic feet per revolution $370 00

Revolutions per minute	
175	will melt 2¼ tons iron per hour.
225	" " 3 " "
275	" " 3¾ " "
100	furnish blast for 12 fires.
125	" " 15 "
150	" " 18 "
175	" " 22 "

No. 4. Foundry Blower—Adapted to a cupola 36 to 42 inches inside the lining, discharges 13½ cubic feet per revolution $490 00

Revolutions per minute	
150	will melt 3¼ tons iron per hour.
200	" " 4½ " "
250	" " 6 " "
75	furnish blast for 16 fires.
125	" " 28 "
175	" " 40 "

No. 5. Foundry Blower—Adapted to a cupola 42 to 50 inches inside the lining, discharges 23¼ cubic feet per revolution $725 00

Revolutions per minute	
150	will melt 6¼ tons iron per hour.
200	" " 8¼ " "
225	" " 9½ " "
50	will furnish blast for 20 fires.
100	" " 40 "
125	" " 50 "

No. 6. Foundry Blower—Adapted to a cupola 50 to 60 inches inside the lining, discharges 42 cubic feet per revolution .... $

Revolutions per minute	
125	will melt 9½ tons iron per hour.
150	" " 11½ " "
175	" " 13½ " "
50	furnish blast for 35 fires.
75	" " 52 "
100	" " 70 "

No. 7. Foundry Blower—Adapted to two cupolas, 45 to 55 inches inside the lining, discharges 65 cubic feet per revolution .... $

Revolutions per minute	
100	will melt 13½ tons iron per hour.
125	" " 17 " "
150	" " 20½ " "
50	furnish blast for 60 fires.
75	" " 90 "
100	" " 120 "

Blowers of larger size, adapted to ventilating Public Buildings, Mines, etc., and discharging from 10,000 to 100,000 cubic feet per minute.
These Blowers are used in many Foundries in the Western States, where they are made, and known as the "Indiana Blower."

KEYSTONE PRESSURE BLOWERS AND EXHAUST BLOWERS.

Fig. 1006.

No.	Outside height from floor to top of Blower. Inch.	Outside width from end to end of bearings. Inch.	Outside length from back to nozzle of Blower. Inch.	Height from floor to centre of shaft or pulley. Inch.	Diameter of blast wheel from tip to tip of blades or wings. Inch.	Outside diameter of nozzle. Inch.	Diameter and face of pulleys on Blower. Inch.	Number of revolutions per minute for effective service, with Cupola Furnace or equivalent duty.	Price without Counter-shaft, etc.
No. A.	17	14	15½	10	14	3½	1½ × 2¼	3000	$30 00
" B.	23	18	22	13	17	5	2½ × 3	2800	40 00
" C.	28½	21	27	16	20	6¼	4 × 3	2500	50 00
" D.	37	27	34	21	26	8	5 × 5	2200	70 00
" E.	45	32	41	26	32	9½	6 × 6	2000	90 00
" F.	58	39	51	29	40	11½	8 × 5	1900	135 00
" G.	60	45	60	32½	48	13½	9 × 5	1800	180 00
" H.	70	53	70	38	56	16	10 × 6	1700	240 00
" I.	80	60	80	43	64	18	12 × 8	1500	300 00

KEYSTONE FAN BLOWERS—Improved.

No.	1	2	3	4	5	6
Diameter of Fan, in inches	6	8	10	12	14	16
Diameter of Nozzle, in inches	2½	2¾	3¼	3½	4	6
Diameter and Face of Pulley, in inches	1 × 1¼	1 × 1¼	1 × 1¼	1½ × 2	2 × 2½	3 × 3
Average Speed for Ordinary Service	2500	2500	2500	2500	2500	2500
	$8 00	10 00	12 00	15 00	20 00	30 00

THE TRANSMITTING POWER FORGE BLAST.

Fig. 1007.

It works by a 42 inch grooved fly-wheel, a 6 inch separated hub being bolted to the wheel working on the shaft. The fan box is set at an angle, and a ⅜ inch round belt crosses the 1¼ inch pulley in the groove, where a steel journal works on two hard-tempered steel centres, which leaves only three wearing places on the machine (any other having six or more). By running the belt in this manner, about three hundred revolutions per minute are gained over the old way, there being no slipping.

The Latest Improved Machine, doing from the largest to the smallest Blacksmiths' work, complete..... ..... $45 00

THE HURRICANE BELLOWS.

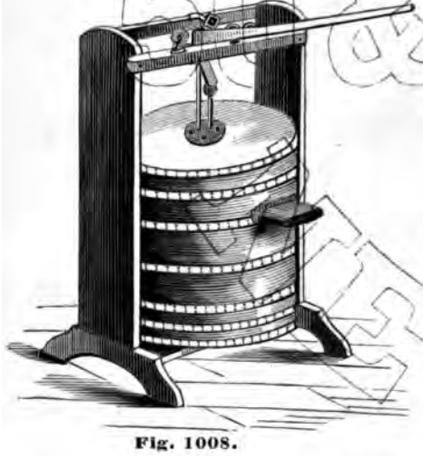


Fig. 1008.

No.....	1	2	3	4
Size, in.	22	24	27	30
Each.	$21 00	25 00	30 00	35 00

ECLIPSE FAN BLOWER.

Fig. 1009.

The Improved Eclipse Fan Blower is so arranged that it can be set to any smith or forge fire, right or left hand side, as the fan case, with outlet, can readily, by loosening bolts, be thrown to the right or left side and in any desired position, and can be turned in either direction with the same result, *a good strong blast*. The crank can, by loosening handle nuts, be thrown forward as shown in cut, or back to dotted line, making it very convenient to be used with or without a helper.

Floor space, 12x20 inches, weight, 100 lbs..... ... $30 00

BRASS FOUNDERS' MELTING FURNACE.

Fig. 1010.

No. 1—For No. 30 Crucible..... $20 00 No. 3—For No. 100 Crucible..... .. $37 50
" 2— " 50 " 27 50
These furnaces are complete, with exception of brick lining.

BRASS FOUNDERS' DRYING STOVE.

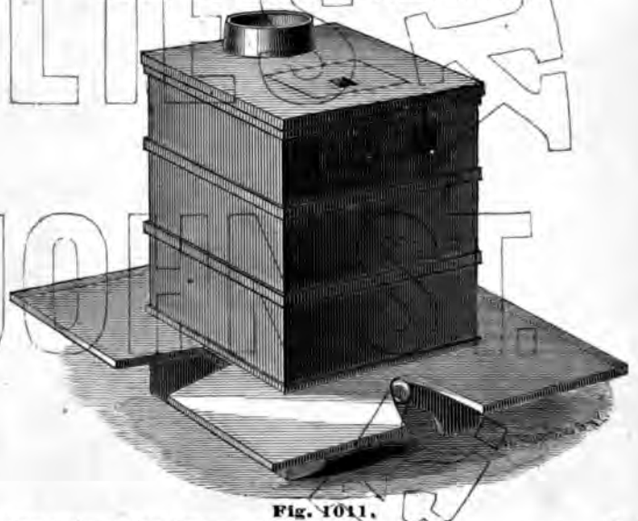


Fig. 1011.

In three sections, top and bottom complete..... $25 00
The top fits any section, and the sections fit into each other. This stove makes an excellent cabinet maker's stove.

BRASS FOUNDERS' FLASKS.

12½x16¼ inches inside..... $5 00

ORDINARY OR COMMON BELLOWS.

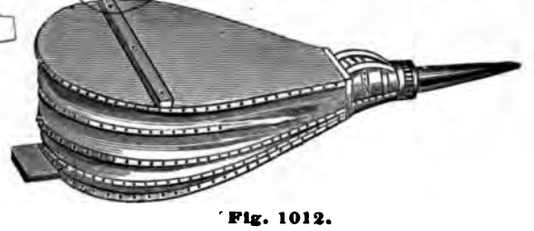


Fig. 1012.

Size, inch.....	18 to 22	24	26	28	30	32	34
Each.....	$8 50	9 00	10 00	11 00	12 00	14 00	16 00
Size, inch.....	36	38	40	42	44		
Each.....	$18 00	20 00	23 00	27 00	32 00		

C.D. CLARK SUPPLIES 50 & 52 JOHN ST. NEW-YORK

STURTEVANT BLOWERS.

Owing to probable changes in lists and patterns, particulars must be deferred until close of this book.

THE IMPROVED MACKENZIE PATENT BLOWER.

Fig. 1013.

They will melt as follows, with the Mackenzie Cupola:

No. 3 will supply Blast for Cupolas from 1 to 3 tons per hour capacity, with 2 to 3 horse power.

No. 4 will supply Blast for Cupolas from 3 to 5 tons per hour capacity, with 3 to 4 horse power.

No. 5 will supply Blast for Cupolas from 5 to 10 tons per hour capacity, with 4 to 6 horse power.

No. 6 will supply Blast for Cupolas from 10 to 15 tons per hour capacity, with 6 to 7 horse power.

These Blowers deliver a *force blast*, and require but little power, as their speed does not exceed one hundred revolutions per minute. They are very durable, noiseless, and will melt faster and with less power in *old style cupolas* than any other Blower in use.

No. 3 will supply Blast for Old Style Cupolas to 30 inches in diameter, with 3 to 3½ horse power.

No. 4 will supply Blast for Old Style Cupolas from 30 to 36 inches in diameter, with 3½ to 5 horse power.

No. 5 will supply Blast for Old Style Cupolas from 36 to 48 inches in diameter, with 5 to 7 horse power.

No. 6 will supply Blast for Old Style Cupolas from 48 to 60 inches in diameter, with 7 to 8 horse power.

No.	3	4	5	6
Each	$350 00	450 00	615 00	690 00

CLARK'S PATENT BLOWER.

SINGLE PRESSURE BLOWERS—For Smiths' Fires, Forges, and Rolling Mills.

Letter	A	B	C	D	E	F	G	H	I	J	K	L	M
Number of Smiths' Fires	3	5	12	18	28	38	52	68	88	112	136	164	192
Square feet of Grate Surface	2	5	13	20	26	40	50	71	88	100	136	172	210
Revolutions per minute	3000	2300	1870	1575	1400	1200	1070	965	850	808	747	700	650
Each	$20 00	25 00	50 00	75 00	100 00	125 00	150 00	180 00	225 00	250 00	325 00	400 00	500 00

SINGLE PRESSURE BLOWERS—For Cupola Furnaces.

Letter	C	C	D	D	E	F	F	G	G
Diameter of Cupola, inch	25	29	33	38	43	47	52	60	68
Revolutions per minute	3280	3280	3150	3150	2800	2630	2630	2390	2390
Tons melted per hour	2	2½	3½	4½	6	7	8½	11	14½
Each	$50 00	50 00	75 00	75 00	100 00	125 00	125 00	150 00	150 00

DOUBLE PRESSURE BLOWERS—For Smiths' Fires, Forges, and Rolling Mills.

Letter	B	C	D	E	F	G	H	I	J	K	L	M
Number of Smiths' Fires	5	12	18	28	38	52	68	88	112	136	164	192
Square feet of Grate Surface	3	4	8	14	30	50	71	88	100	136	172	210
Revolutions per minute	2200	1600	1250	1100	980	880	788	690	658	610	567	530
Each	$35 00	65 00	100 00	150 00	188 00	225 00	263 00	337 00	375 00	488 00	600 00	700 00

DOUBLE PRESSURE BLOWERS—For Cupola Furnaces.

Letter	C	C	D	D	E	F	F	G	G
Diameter of Cupola, inch	25	29	33	38	43	47	52	60	68
Revolutions per minute	2920	2920	2330	2330	2260	2190	2190	1966	1966
Tons melted per hour	2	2½	3½	4½	6	7	8½	11	14½
Pressure of Blast for Speeds for Single and Double Blowers in terms of a column of water, inch	12	14	17	20	20	20	20	20	20
Each	$65 00	65 00	100 00	100 00	150 00	188 00	188 00	225 00	225 00

SINGLE PRESSURE BLOWERS—For Boiler Fires, Ventilation and Drying Purposes.

Letter	A	B	C	D	E	F	G	H	I	J	K	L	M
Square feet of grate surface	2	5	13	20	26	40	50	71	88	100	136	172	210
Revolutions per minute	3200	2200	1690	1250	1100	980	880	788	690	658	610	567	530
Cubic feet per minute	400	600	1200	1800	2500	5000	8000	11000	13000	16000	19000	22500	25000
Each	$20 00	25 00	50 00	75 00	100 00	125 00	150 00	180 00	225 00	250 00	325 00	400 00	500 00

QUADRUPLE PRESSURE BLOWERS—For Cupola Furnaces.

Letter	G	H	I	J	K	L	M	N
Diameter of Cupola in inches	21	25	29	33	38	43	47	52
Revolutions per minute	1500	1400	1400	1400	1400	1300	1200	1100
Tons melted per hour	1½	2	2½	3½	4½	6	7	8½
Pressure of blast in terms of a column of water, inch	12	14	17	20	20	20	20	20
Each	$135 00	160 00	185 00	210 00	235 00	270 00	310 00	350 00

Exhaust Fans same price as Single Pressure Blowers.

MOLDERS' TOOLS.

SQUARE TROWELS.

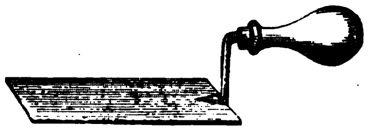


Fig. 1014.

Inches	4	4½	5	5½	6
1	$6 00	6 75	7 50	8 25	9 00
1¼	7 50	8 25	9 00	9 75	10 50
1½	9 00	9 75	10 50	11 25	12 00
1¾	10 50	11 25	12 00	12 75	13 50
2	12 00	12 75	13 50	14 25	15 00

LIFTERS.

Fig. 1015.

Inches	10	12	14	16	18	20
¼	$5 25	6 00	6 75			
⅜	6 00	6 75	7 50	8 25		
½	6 75	7 50	8 25	9 00		
⅝		8 25	9 00	9 75	10 50	
¾		9 00	9 75	10 50	11 25	
⅞		9 75	10 50	11 25	12 00	12 75
1		10 50	11 25	12 00	12 75	13 50

FLANGE LIFTERS.

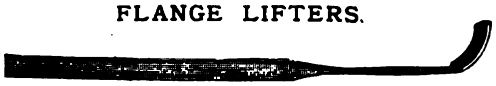


Fig. 1016.

Size, inch	¾ × 16	⅞ × 18	1 × 20
Per doz	$18 00	19 50	21 00

HEART AND SQUARE.

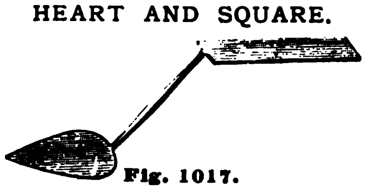


Fig. 1017.

Size, inch	1	1¼	1½	1¾	2
Per doz	$6 00	7 50	9 00	10 50	12 00

HEART TROWEL.

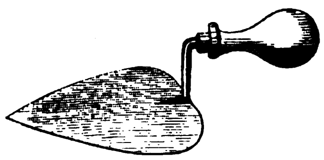


Fig. 1018.

Size, inch	2	2¼	2½	2¾	3
Per doz	$6 00	7 50	9 00	10 50	12 00

TAPER ROUND POINT.

Fig. 1019.

Size, inch	1	1¼	1½
Per doz	$6 75	8 25	9 75

HALF ROUND CORNER.

Size, in	1	1¼	1½	1¾	2
Per doz.	$6 00	6 75	7 50	8 25	9 00

Fig. 1020.

FLANGES.

Fig. 1021.

FLAT FLANGE.

Size, in	¾	1
Per doz.	$15 00	18 00

CIRCULAR FLANGE.

Size, in	¾	1
Per doz.	$16 50	19 50

FLAT AND CIRCULAR FLANGE.

Size, inch	¾	1
Per doz	$18 00	21 00

FLANGE AND BEAD.

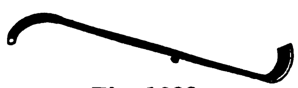


Fig. 1022.

Size, inch	¾	1
Per doz	$12 00	15 00

DOUBLE SQUARE END.

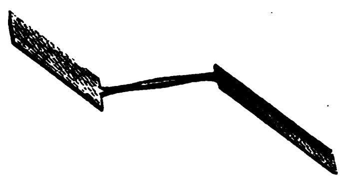


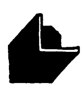
Fig. 1023.

Size, inch	½	⅝	¾	⅞	1
Per doz.	$5 25	6 00	6 75	7 50	8 25

SQUARE STRAIGHT.

Size, inch	½	⅝	¾	⅞	1
Per doz.	$6 00	6 75	7 50	8 25	9 00

SQUARE CORNER.



Size, inch	2	2½	3
Per doz	$7 50	8 25	9 00

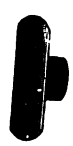
Fig. 1024.

BEAD SLICKS.

Fig. 1025.

Size, inch	½	⅝	¾
Per doz	$6 75	7 50	8 25

PIPE SLICKS.



Size, inch	1½	2	2½	3	3½
Per doz.	$6 00	6 75	7 50	8 25	9 00

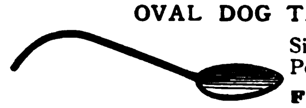
Fig. 1026.

YANKEE.

Fig. 1027.

Size, inch	½	⅝	¾	⅞	1
Per doz.	$6 00	6 25	7 50	8 25	9 00

OVAL DOG TAIL.



Size, inch.	1	1¼
Per doz.	$7 50	9 00

Fig. 1028.

CRUCIBLES.

Fig. 1029.

All sizes, 5 cts. per number. About 2 lbs. metal to each number crucible.

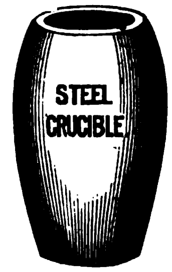


Fig. 1030.

SPOON SLICKS.

Fig. 1031.

	SPOON.		FLUTE.		
Size, inch	1¼	1½	⅜	⅝	⅞
Per doz	$7 50	9 00	7 50	8 25	9 00

FOUNDRY or MOLDERS' BELLOWS.

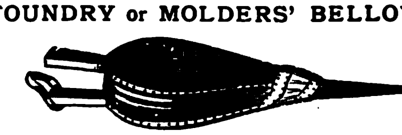


Fig. 1032.

Size, in.	9	10	11	12	13	14	16
Doz.	$15 00	17 00	20 00	24 00	26 00	28 00	33 00

MOLDERS' RIDDLES.

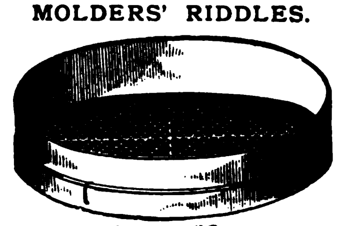


Fig. 1033.

Diameter, inch	16	18	20
Brass, per doz	$15 00	17 00	19 00
Steel, "	11 00	13 00	15 00
Galvanized, per doz	9 00	11 00	13 00
Iron, "	7 00	9 00	11 00

PATTERN MAKERS' SHRINKAGE RULES.

Boxwood, per doz....................$15 00
Two fold Boxwood, triple-plated edge plates.................... 18 00
Above graduated 8th × 16th of inches.

Ebert's Patent Machine Made Core Box and Corner Fillets.

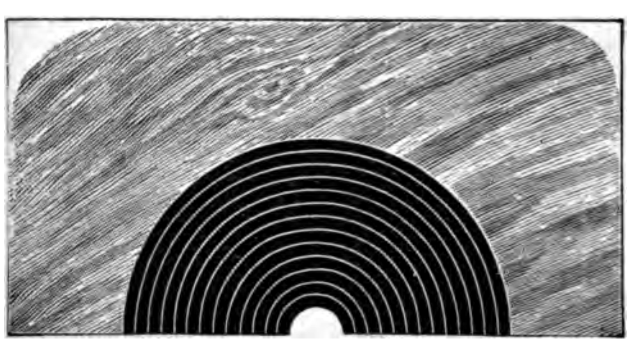


Fig. 1034

More true and cheaper than those made by hand. Sizes, varying from ¼ to 3 inches, always on hand, ready for use, in any length required.

¼ inch in diam. and under, per foot...$0 06
⅜ to 2, by ⅛ inch, advance.......... 02

METALLIC MOLDING LETTERS AND FIGURES,

FOR FOUNDRYMEN, MACHINISTS, AND PATTERN MAKERS.

Fig. 1035. Flat Face Gothic.

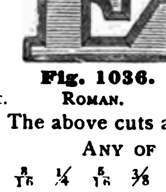


Fig. 1036. Roman.

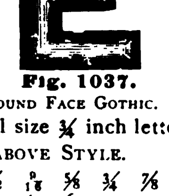


Fig. 1037. Round Face Gothic.

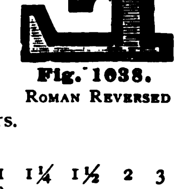


Fig. 1038. Roman Reversed

The above cuts are full size ¾ inch letters.

Any of the above Style.

Size, inch	⅛	3/16	¼	5/16	⅜	7/16	½	9/16	⅝	¾	⅞	1	1¼	1½	2	3
Each	$0 04	4	4	4	5	5	5	6	6	7	7	8	10	12	15	17

MOLDERS' SHOVELS.

SOLID CAST STEEL, SQUARE POINT—Size 2.

Brand	Ames.	Treadwell.	Blair.	Carter.	Sanderson.	Rowland.
Per doz	$18 00	17 00	16 00	14 00	11 00	14 50

STEEL CASTING BRUSHES.

Fig. 1039.

3	inch wire,	4	rows, per doz.,	$6 00	2 inch wire,	4	rows, per doz., $5 50
3	"	5	" "	7 50	2 "	5	" " 6 50
2½	"	5	" "	7 00			

Fig. 1040.

(Fig. 1040.)

5 inch wire, per dozen..... $6 00
4 " " 5 50

Fig. 1041.

3	inch wire,	4	rows, per doz.,	$6 00	2 inch wire,	5	rows, per doz., $6 50
3	"	2	" "	4 00	2 "	4	" " 5 50
2½	"	5	" "	7 00	2 "	3	" " 4 00

WAXING BRUSH.

Fig. 1042.

Per dozen..... $6 00 to 12 00

RATTAN BROOMS.

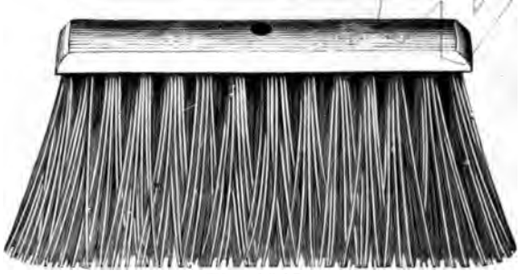


Fig. 1043.

Inch	12	14	16
Per doz.	$10 00	11 00	12 00

Extra Brooms made to order.

HARD BRISTLE BRUSH.

Fig. 1044.

Per dozen..... $7 00
" extra..... 8 00

SOFT BRISTLE BRUSH.

Fig. 1045.

Per dozen..... $6 00
" extra..... 8 00

FACTORY DUSTERS.

Fig. 1046.

No. 1, per doz..... $9 00 No. 2, per doz..... $12 00
No. 3, extra, for Foundry purposes, per doz..... $27 00

BENCH BRUSHES.

Fig. 1047

PURE BRISTLES, ENAMELED BLOCK.

No. 1, per doz.	$6 60	No. 3, per doz.	$8 00		
" 2, "	7 25	" 4, "	10 00		

PURE WHITE BRISTLES, ENAMELED BLOCK.

No. 0, per doz.	$7 50	No. 3, per doz.	$12 25
" 1, "	8 25	" 4, "	15 00
" 2, "	10 00		

EXTRA HEAVY BRUSH, CASED ON OUTSIDE WITH WHITE BRISTLES, ENAMELED BLOCK.

No. 5, per doz.	$11 50	No. 8, per doz.	$18 00
" 6, "	13 50	" 9, All Gray Bristles, doz.	16 00
" 7, "	16 50	" 10, " " "	20 00

STEEL BROOMS.

Fig. 1048.

12	inch block,	7	inch wire,	4	rows, per doz.	$14 00
14	"	7	"	4	" "	16 00
16	"	7	"	4	" "	18 00
Upright Broom, 7		"	2	"	"	12 00

COLLICOTT'S PATENT FLEXIBLE BOILER TUBE SCRAPER AND CLEANER.

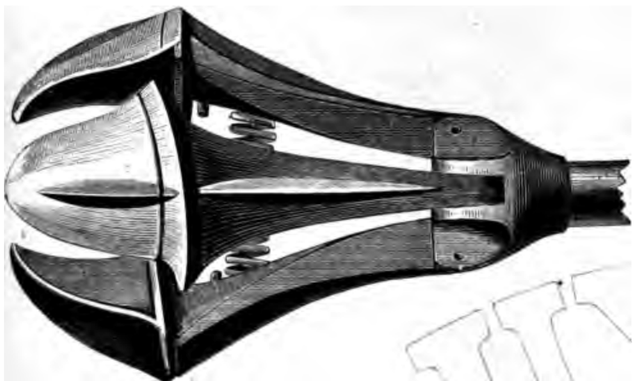


Fig. 1049.

All sizes from 2 to 6 inches, per inch in diameter............$1 00

Inside Measurement.

NATIONAL TUBE SCRAPER.

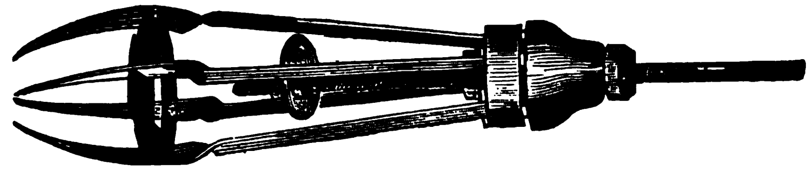


Fig. 1054.

Size Tube, inch	1½	2	2½	3	3½	4
Each	$3 00	3 00	3 50	4 00	4 50	5 00

MORSE FLUE SCRAPER.

Fig. 1055.

All Sizes, per inch $1 00

FREEMAN'S PATENT STEEL BOILER FLUE SCRAPER.

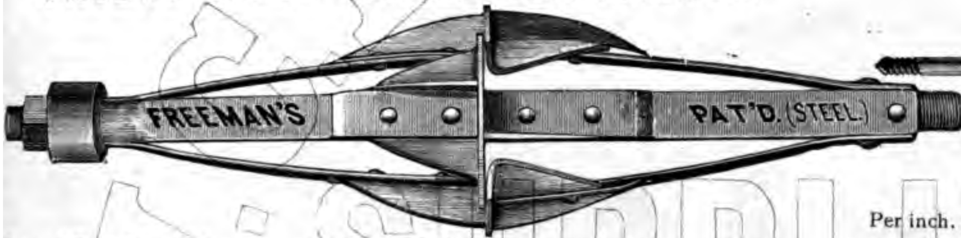


Fig. 1050.

Size of Flue, outside Diameter, inch	1 to 2	2	2¼	2½	2¾	3	3¼	3½	3¾	4
Each	$2 00	2 00	2 25	2 50	2 75	3 00	3 25	3 50	3 75	4 00

ELASTIC TUBE SCRAPER.

Fig. 1056.

Per inch..$1 00

SMITH'S ADJUSTABLE TUBE SCRAPER.

Screw the Handle on the Scraper Tight.

Fig. 1051.

Size, inch	1½	2	2½	3	3½	4	5	6
Each	$2 50	3 00	3 50	4 00	4 50	5 00	6 00	7 00

By contracting or expanding diameter, a 2 inch Scraper will clean 1¾, 2 or 2¼ inch tube. To contract, turn shaft to the left; to expand, turn to right.

STEEL COIL BRUSHES.

Fig. 1057.

Size, inch	1 to 1¾	2	2¼	2½	2¾	3	3¼	3½	3¾	4
Per inch	$1 00	1 10	1 20	1 30	1 40	1 50	1 65	1 75	1 90	2 00

Over 4 inches, 75 cents per inch.

Fig. 1052.

ELLIPTIC BRUSHES.

(Fig. 1052.)

Size, inch	1 to 2	2¼	2½	2¾	3	3¼	3½	3¾	4
Per inch	$2 00	2 25	2 50	2 75	3 00	3 25	3 50	3 75	4 00

Over 4 inches, $1 25 per inch.

WHALEBONE OR STEEL BRUSH.

(Fig. 1058.)

Over 6 inches, Wood or Wire Shaft.

Over 6 inches, on Wood Shaft, Bone, per inch...$0 75
" 6 " " " Wire, " ... 75
" 12 " " " " " ... 85

SPIRAL WHALEBONE OR STEEL WIRE FLUE BRUSH.

Fig. 1058.

Fig. 1053.

Outside Measurement of Tube	1	1¼	1½	1¾	2	2¼	2½	2¾	3	3¼	3½	4	4½	5	5½	6
Spiral Whalebone Flue Brush	$0 75	0 75	0 75	0 80	0 90	1 00	1 10	1 25	1 40	1 50	1 75	2 00	2 25	2 50	2 75	3 00
Spiral Steel Wire Flue Brush	1 00	1 00	1 00	1 10	1 25	1 40	1 50	1 60	1 75	2 00	2 25	2 50	2 75	3 00	3 25	3 50
Stillwell's Patent Galvanized		1 45	1 55	1 70	1 90	2 10	2 30	2 50	2 80	300	3 30	3 75		4 25		4 75

SPENCER'S STEEL BRUSH FLUE CLEANER.

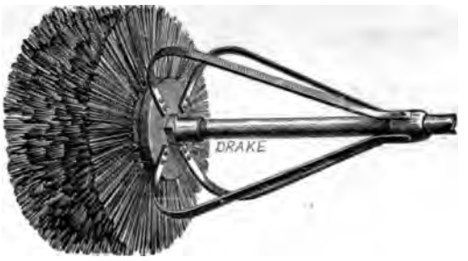


Fig. 1059.

Over 6 inches, per inch..... $1 25

SPENCER'S STEEL BRUSH TUBE CLEANER.

Fig. 1060.

Up to 6 inches, per inch..... $1 00

CAR WINDOW BRUSHES.

Fig. 1061.

No. 0, per doz., $9 00 No. 1, per doz., $12 00 No. 2, per doz., $16 00

Fig. 1062.

No. 0, per doz., $12 00 No. 1, per doz., $16 00 No. 2, per doz., $20 00
Poles for above, 6, 8, 10, and 12 feet.

CAR OR WINDOW WASHERS.

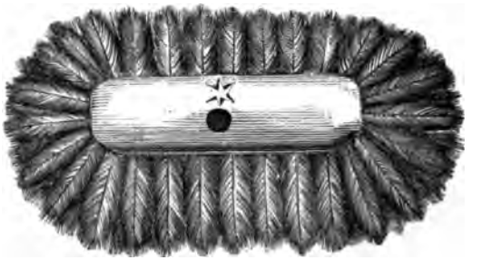


Fig. 1063.

No.	1	2	3
Per dozen	$12 00	15 00	18 00

POLES.

Length, feet	3	4	5	6	8
Per dozen	$1 50	6 00	7 00	9 00	12 00

McLAUGHLIN'S PATENT CAR WASHER.

Fig. 1064.

No. 1, 10 inch diameter, per dozen..... $36 00
" 2, 8 " " " 24 00
" 3, 6 " " " 20 00

FEATHER DUSTERS.

Fig. 1065.

Length, 4 inch., per doz.	$2 00	Length, 12 inch., per doz.	$36 00
" 5 " "	3 00	" 14 " "	45 00
" 6 " "	6 00	" 16 " "	48 50
" 7 " "	9 00	" 18 " "	49 50
" 8 " "	13 00	" 20 " "	50 50
" 9 " "	19 00	" 22 " "	51 50
" 10 " "	24 00	" 24 " "	54 00

STEEL WIRE LOCOMOTIVE SNOW AND TRACK BROOMS.

No. 1, Plain..... $36 00

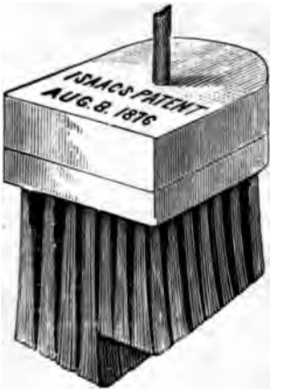


Fig. 1066.

No. 2—To Fit Right or Left on Track, per dozen..... $40 00

Fig. 1067.

No. 3—To Fit Both Sides of Track, per dozen..... $72 00

DUDGEON'S ROLLER TUBE EXPANDER.

Fig. 1068.

Size, inch.	1	1¼	1½	1¾	1⅞	2	2¼	2½	2¾	3	3¼	3½	4	4½	5	6	7
	$20	20	20	25	25	30	35	42	48	55	60	70	85	100	120	130	180

These dimensions refer to the external diameter of tube.

BOILER PUNCH.

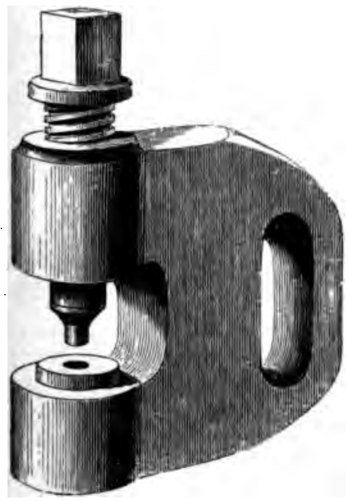


Fig. 1069.

(Fig. 1069.)

Wrought Iron, No 1 ....$40 00
" " " 2, extra heavy.. .... 50 00
These have ½, ⅝, and ¾ inch punches and dies.
Steel, with one size punch and dies... .... 55 00
Extra punches and die for the above 5 00
" large steel punch for heavy plates 100 00

BALL FACED HAMMERS.

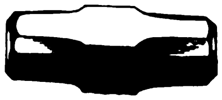


Fig. 1070.

Solid Cast Steel, per lb. 50 cents.

BOILER MAKERS' RIVETING HAMMERS.

Fig. 1071.

Solid Cast Steel, per lb.................... ......$0 75
Cast Steel face and pane, per lb. 50

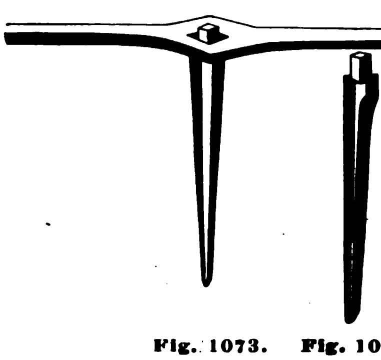
HAND RIVET.

SETS ASSORTED.

Fig. 1072.

Solid Cast Steel, per lb $0 60

SQUARE. OVAL. EYE REAMER.



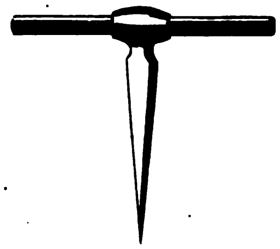


Fig. 1073. Fig. 1074. Fig. 1075.

Per Set.... ....$8 00

PATENT TUBE CUTTER.

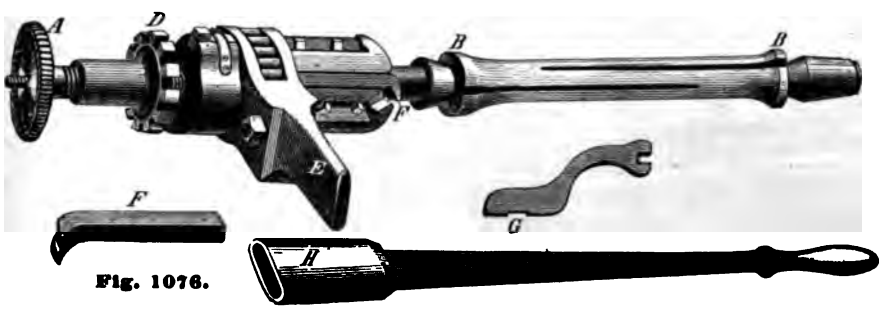


Fig. 1076.

PROSSER'S PATENTS.

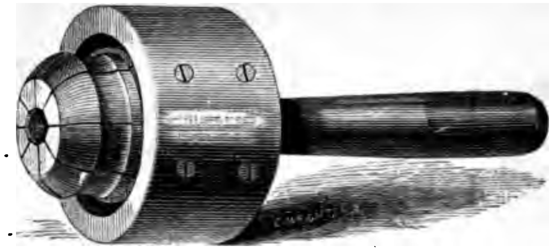


Fig. 1077.—PATENT GUIDE RING TUBE EXPANDER.

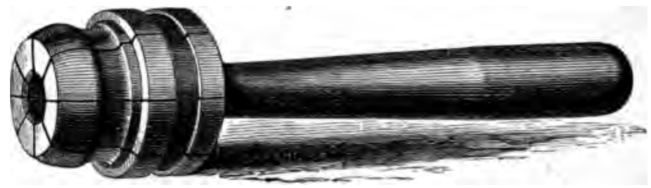


Fig. 1078.—PATENT SPRING TUBE EXPANDER.

Outside Diameter of Tube, inch ..	1	1¼	1½	1¾	2	2¼	2½	2¾
Guide Ring Expanders, each		$14 00	16 00	18 00	20 00	25 00	30 00	35 00
Spring Expanders, each..........	$10 00	10 00	12 00	15 00	15 00	18 00	20 00	25 00
Outside Diameter of Tube, inch..	3	3¼	3½	4	4½	5	6	7
Guide Ring Expanders, each	$40 00	45 00	50 00	60 00	70 00	75 00	100 00	130 00
Spring Expanders, each.........	30 00	35 00	40 00	45 00	50 00	55 00	80 00	100 00

CUTTER DRILL.

Fig. 1079.

REAMER—COUNTERSINK.

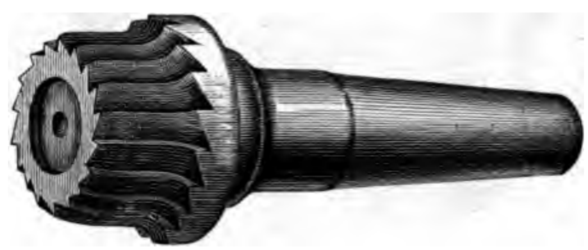


Fig. 1080.

Outside Diameter of Tube, inch.......	1	1¼	1½	1¾	2	2¼	2½	2¾
3-Cutter Drills, each					$20 00	25 00	30 00	35 00
Pair Reamer Countersinks and Stock..				$15 00	18 00	20 00	23 00	25 00
Outside Diameter of Tube, inch..........	3	3¼	3½	4	5	6	7	
3-Cutter Drills, each..................	$40 00	45 00	50 00	60 00	75 00	100 00	130 00	
Pair Reamer Countersinks and Stock....	30 00	35 00	40 00	45 00	50 00	60 00	80 00	

Large ones made to order.

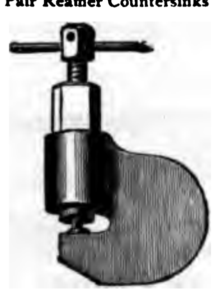


Fig. 1081.

DUDGEON'S PATENT HYDRAULIC PUNCHES.

WITHOUT VALVES OR THE FORCE PUMP GENERALLY USED.

To punch ¼ iron for ⅝ rivets or bolts................$70 00
" ⅜ " ⅝ " " 80 00
" ½ " ⅝ " " 100 00
" ½ " ¾ " " 120 00
" ⅝ " ¾ " " 150 00
" ¾ " ⅞ " " 200 00

(Fig. 1075.)

This tool is intended for cutting off the ends of boiler tubes, after being placed in the boiler and expanded at one end; but when the form of the boiler does not admit of this, they can be measured and cut to their proper length before they are put into their places.

The Cutter is made of two sizes, namely—

No. 1 to cut 2 inch, 2¼ inch, 2½ inch, 3 inch, 3¼ inch, 3½ inch, 4 inch, and 4½ inch tubes...................... ....$75 00

No. 2 to cut 1¾ inch, 2 inch and 2¼ inch tubes, expressly for locomotives. 45 00

TEAL'S IMPROVED BOILER ROLLS.

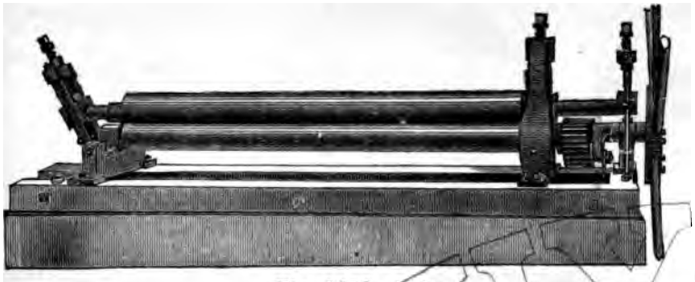


Fig. 1082.—No. 1.

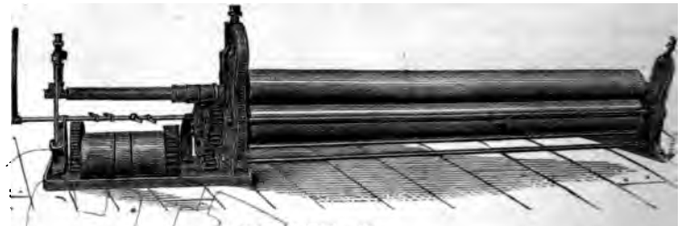


Fig. 1083.—No. 2.

The above cuts represent Hand and Steam Power Bending Rolls of the most improved pattern, arranged for removing work from the end of top roll. For this purpose there is a yoke, hinged at the bottom, and having the roll bearing so constructed that when the yoke is swung down it will clear the journal.

At the extreme opposite end of the machine is an auxiliary bearing, which is forced down by means of a screw upon the lengthened shaft of the roll, and supports it while the yoke bearing is removed.

No. 1. HAND POWER ROLLS.

Are driven by a "Spider" on one bottom roll shaft, which is lengthened for the purpose. The other bottom roll is adjustable sidewise, power being communicated to it through expansion gear. This machine is mounted on a heavy wooden frame, and will bend 5-16 inch iron.

Machines for bending 5 feet wide	$250 00	Machines for bending 7 feet wide	$325 00
" " 6 "	275 00	" " 8 "	400 00

No. 2. STEAM POWER ROLLS.

Steam Power Rolls are back geared like a machinist's lathe, and are provided with 24 inch pulleys for 4 inch straight and cross belts for turning in either direction, which pulleys have thirty-seven revolutions to one revolution of rolls in six and eight feet machines, and fifty-four revolutions to one revolution of rolls in ten and twelve feet machines. Bottom rolls, which are of cast iron are driven. Top roll is of wrought iron, and of less diameter for bending small circles. The belt shifter works on trunnions, and is provided with a latch for holding the belts where they are put. Capacity, ⅝ inch iron.

Machines for bending 6 feet wide	$800 00	Machines for bending 10 feet wide	$1200 00
" " 8 "	900 00	" " 12 "	1300 00

No. 3. HAND AND STEAM POWER ROLLS.

This machine is driven by a worm and worm gear, with forty revolutions of worm to one revolution of rolls. Pulleys are on the worm shaft, and are 24 inch diameter for 3 inch straight and cross belts, which are worked by the "lock" shifter, as described in Power Rolls. Each end of the worm shaft is provided with a crank for hand power. The entire machine is mounted on a heavy wooden frame, requiring no foundation in putting up.

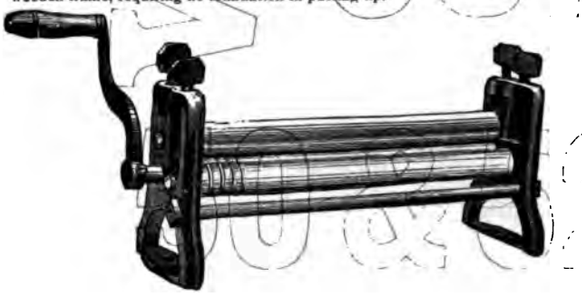


Fig. 1084.

This and all our patterns of rolls are provided with swivel bearings in the yoke and housing, for bending taper.

Bottom rolls, like Power Machine, are of cast iron, top roll is of wrought iron. Capacity, ½ inch iron.

Machines for bending 5 feet wide	$475 00	Machines for bending 7 feet wide	$550 00
" " 6 "	510 00	" " 8 "	560 00

This size for hand power only, a reduction of $30 00 on each size.

ROLLS FOR LIGHT MATERIAL.

(Fig. 1084.)

Size of Rolls, 1½ inch diameter, 16 inches long	$9 00
" " 2 " " 30 " "	19 00
" " 3 " " 37 " "	15 00

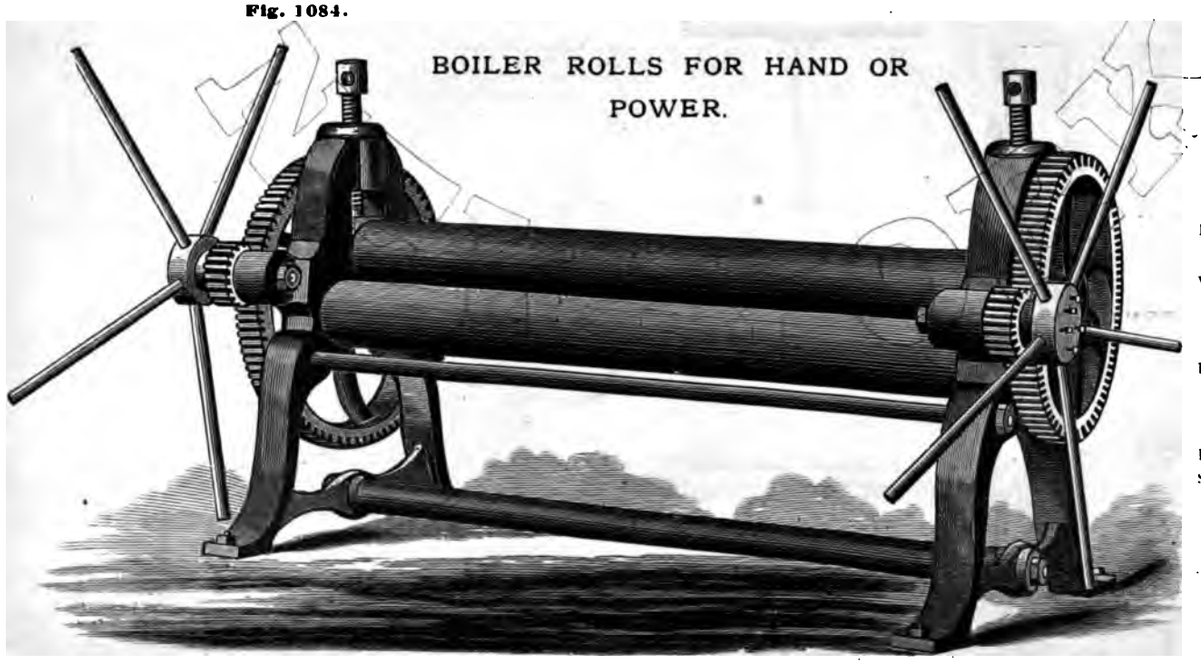


Fig. 1085.

HAND LEVER BOILER SHEET ROLLS.

With or without being geared, bending sheets 4 to 6 feet wide, 4-foot rolls, $350 00.

Extra for each additional 6 inches above 4 feet, $10 00

POWER BOILER SHEET ROLLS.

Same capacity as above, $550 00 to $1200 00.

PATENT "DUPLEX" LEVER PUNCHES.

POWERFUL, PORTABLE, SIMPLE, AND EASY TO WORK.

The open mouth Punches will be found invaluable. They possess great power, and will punch the heaviest Boiler and Ship Plates, Angle and other Iron, with ease and great rapidity.

These Punches require no skilled labor to use them, nor are they liable to break or get out of repair.

They are made of the very best materials, and exhibit the highest mechanical ingenuity in design and construction. They are so simple, and their application so apparent, that directions for use are quite unnecessary.

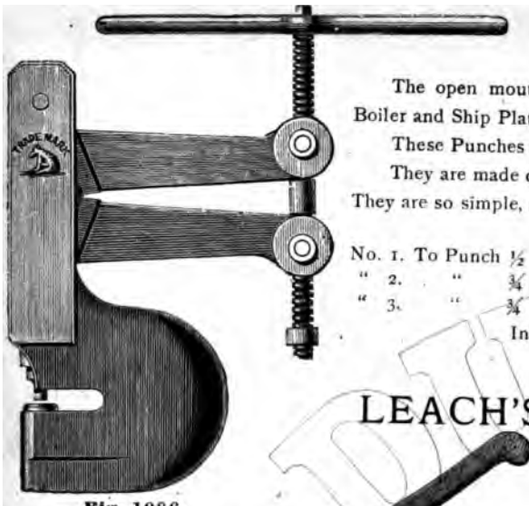


Fig 1086.

		Centre of Punch to back.		
No. 1.	To Punch ½ inch through ¼ inch plate	1⅛ inch	Weight, 25 lbs.	$62 50
" 2.	" ¾ " " ⅜ "	" ... 1½ "	" 42 "	80 00
" 3.	" ¾ " " ⅜ "	" ....2 "	" 89 "	105 00

Including one round Punch and Die of the largest size.
Extra Punches and Dies. Round, $4 50 per pair.

LEACH'S PATENT HAND PRESSES AND SHEARS.

DOUBLE LEVER HAND PRESS AND SAW GUMMER.

(Figs. 1087 and 1089.)

No. 1. Will punch 3-16 inch hole, ⅛ inch plate, 2 inches from edge. Weighs 35 lbs. Lever 18 inches long.

No. 2. With Gauge and Die for Cutting and Gumming Saws. Will punch ¼ inch hole, ¼ inch plate, 3 inches from edge. Weighs 125 lbs. Lever 26 inches long.

No. 1.	Without Dies	$25 00
	With Round Die and Punch	27 00
	With Gauges and Die for Saw Gumming	30 00
No. 2.	Without Dies	45 00
	With Round Die and Punch	50 00
	With Gauges and Die for Saw Gumming	55 00

Fig. 1087.—No. 1.

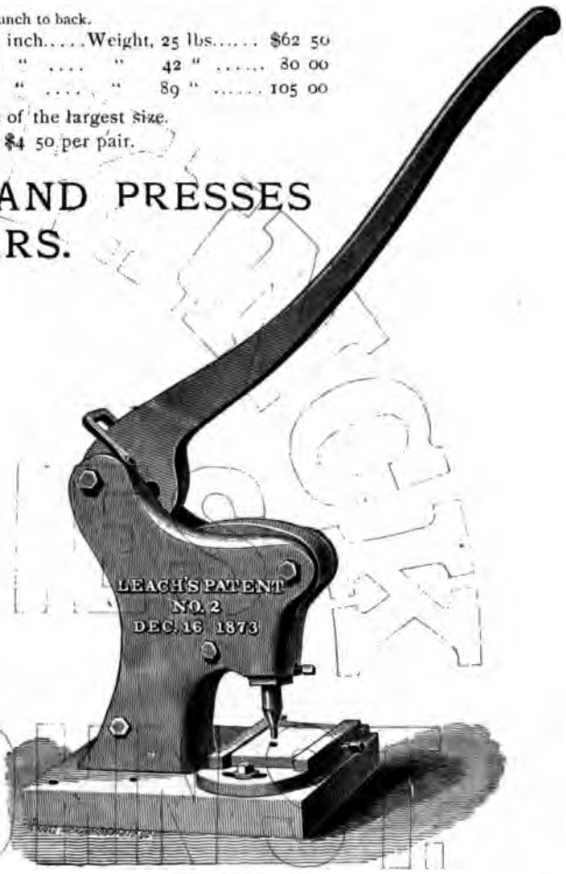


Fig. 1089.—No. 2.

No. 3. Will punch ⅜ inch hole, ⅜ inch plate, 4 inches from edge. Weighs 300 lbs. Lever 6 feet long.

Without Die	$60 00
With Round Die and Punch	75 00

Dies of any shape to order.

DOUBLE LEVER HAND SHEARS.

(Figs. 1088 and 1090.)

THIS IS THE BEST AND CHEAPEST HAND SHEARS FOR HEAVY WORK IN USE.

No. 1. Without Legs, made to screw to Bench, will shear 5-32 inch Iron; Lever 20 inches long; 7 inch blade | $20 00

No. 2. With Legs, will shear ¼ inch Iron; Lever 46 inches long; 8 inch blade | 40 00

No. 3. With Legs, will shear ¼ inch Iron; Lever 4 feet long; 14 inch blade | 75 00

Will cut Plate of any width

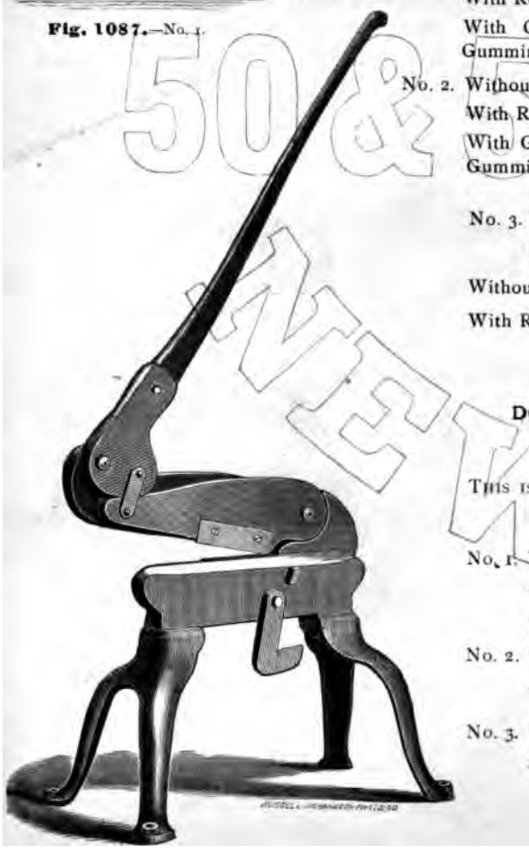


Fig. 1088.—No. 2.

Fig. 1090.—No. 1.

SCREW PRESS.

Fig. 1091.

Nos. 2 and 3 are of the same style, except that the levers have balls on each end.

No.	1	2	3
Triple Thread, Pitch, in.	2	2	2¼
Each	$80 00	135 00	275 00

BENCH DROP PRESS.

Fig. 1092.

Is very convenient for lettering and other light work.

Length of Guides, feet	3
Width between Guides, inches	8½
Each	$50 00

HERCULES IRON CUTTERS.

Fig. 1093.

No. 1—Weighs 62 lbs., cuts ⅜x2 inch, or ½ inch round or square	$30 00
" 2—Weighs 165 lbs., cuts ⅝x2 inch, or ¾ inch round or square	50 00
" 3—Weighs 357 lbs., cuts ¾x4 inch, or 1 inch round or square	75 00

CONCENTRATED POWER SHEARING AND PUNCHING MACHINES.

Fig. 1094.—SHEAR.

No. 1—Bar Shear, cuts ⅛x1½ inch Iron Bar, and ¼ inch Round Rod	$10 00
" 2—Bar Shear, cuts ¼x2 inch Iron Bar, and ⅜ inch Round Rod	20 00
" 3—Bar Shear, cuts ⅜x4 inch Iron Bar, and ⅞ inch and smaller Round Rod	60 00
" 4—Plate Shear, cuts ⅛ inch Sheet Metal any width	30 00
" 5—Plate Shear, cuts ¼ inch Sheet Metal any width	55 00

Fig. 1095.—PUNCH.

No. 1—Punches ⅛ inch hole in ⅛ inch Iron, 2 inches from edge	$15 00
" 2—Punches ⅜ inch hole in ⅛ inch Iron, 2½ inches from edge	25 00
" 3—Punches ½ inch hole in 5-16 inch Iron, 6 inches from edge	85 00

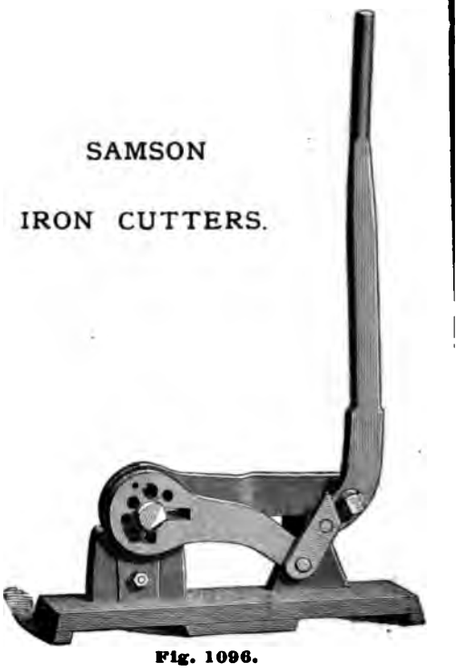


Fig. 1096.

No. 1 will cut ⅝ round, and all sizes smaller; will also cut ½ square and smaller, and ¼ by 1 inch flat and smaller.

No. 2 will cut ¾ round and smaller; will also cut ⅝ square and smaller, and ⅜ by 1¼ inches and smaller.

No. 3 will cut 1 inch round and smaller; and also cut ⅞ square and smaller, and ½ by 1½ flat and smaller.

No. 1 Machine	$24 00
" 2 "	32 00
" 3 "	48 00

SCREW OR FLY PRESS.

Fig. 1097.

No. 1.	Screw 2 inch diameter			$45 00
" 2.	" 2 "	"		60 00
" 3.	" 2⅛ "	"		95 00
" 4.	" 2⅜ "	"		165 00

Lyon's Patent Hand and Power Shears and Punching Presses.

Fig. 1098.—CUTTING SHEARS.

ROUND RODS.

No. 0—Cuts	¼ and 3-16 inch	$6 00
" 1— "	5-16, ¼, and 3-16 inch	12 00
" 2— "	⅜, 5-16, and ¼ "	15 00
" 3— "	⅛, ⅜, and 5-16 "	18 00
" 4— "	⅝, ½, and ⅜ "	24 00
" 5— "	¾, ⅝, and ½ "	40 00
" 6— "	⅞, ¾, and ⅝ "	60 00
" 7— "	1, ¾, ⅝, and ½ "	80 00
" 8— "	1⅛, 1, ⅞, ¾, ⅝ and ½ inch	100 00

SQUARE RODS.

No. 2—Cuts	5-16 and ¼ inch	$20 00
" 3— "	⅜, 5-16, and ¼ inch	23 00
" 4— "	½, ⅜, and 5-16 "	28 00
" 5— "	⅝, ½, and ⅜ "	45 00
" 6— "	¾, ⅝, ½, and ⅜ "	66 00
" 7— "	⅞, ¾, ⅝, and ½ "	85 00
" 8— "	1, ¾, ⅝, and ½ "	100 00

Fig. 1099.—CUTTING SHEARS.

FLAT BARS.

No. 0—Cuts	¾ x 1-16	$7 00
" 1— "	1¾ x ⅛	10 00
" 2— "	1¾ x ¼	15 00
" 3— "	2 x ¼	25 00
" 4— "	2 x ⅜	40 00

Fig. 1101.—COMBINED PUNCH AND SHEARS.

ROUND, FLAT BARS AND PLATES.

No. 0—Cuts to 3-16 inch wire, punches and cuts hoop iron $15 00

" 2—Cuts to ⅜ inch round, and to 1¼x¼ inch bars, punches ¼ inch in ¼ inch iron. 3¼ inches from edge to centre of hole 65 00

" 3—Cuts to ¾ inch round iron, and 3½x⅜ inch bars, punches ⅜ inch in ⅜ inch iron, 4 inches from edge to centre of hole 125 00

WILL CUT ANY WIDTH THROUGH THE CENTRE OF SHEET.

Lever works from the front.

No. 1.—Cuts 3-16 inch iron $40 00

" 2—Cuts ¼ inch iron 60 00

" 3—Cuts 5-16 inch iron 90 00

" 4—Cuts ⅜ inch iron 120 00

Lever works from the back.

No. 5—Cuts 7-16 inch iron 165 00

Fig. 1102.—HAND SHEARS, FOR PLATES.

POWER SHEARS.

For Round Bar Iron. Is under instant control. This machine is a power attachment to our Hand Shears for Round Bars.

No. 9—1 inch and under $175 00
" 10—1¼ " " 275 00

Fig. 1103.—POWER SHEARS, FOR PLATES.

Strong and thoroughly built.

No. 3—Will cut 5-16 inch iron in any size sheet $175 00
" 4— " ⅜ " " " " 225 00

Fig. 1104.—POWER PUNCHING PRESS.

GEARED FOR CONTINUOUS WORK.

No. 4—Punches ½ inch in ⅜ inch, 4 inches from edge. $220 00
" 5— " ¾ " ½ " 7½ " " 300 00

Under instant control. For Tool, Boiler, Iron Railing, Carriage Shops.

Fig. 1105.—PUNCHING PRESS, WITH LEVER.

No. 0—Punches ⅛ in. hole in ⅛ inch iron, 2½ ins. from edge to centre $25 00

No. 1—Punches 3-16 inch hole in 3-16 inch iron, 3½ ins. from edge to centre, 30 00

No. 2—Punches ¼ in. hole in ¼ inch iron, 3¾ ins. from edge to centre 45 00

No. 3—Punches 5-16 inch hole in 5-16 in. iron, 4 inches from edge to centre 60 00

No. 3½—Punches ⅜ inch hole in 5-16 in. iron, 4 inches from edge to centre 85 00

No. 4—Punches ⅜ in. hole in ⅜ inch iron, 4 inches from edge to centre 125 00

No. 5—Punches ½ in. hole in ½ inch iron, 7½ inches from edge to centre 160 00

Fig. 1100.

GIANT IRON CUTTER.

(Fig. 1100.)

These Cutters will cut from 0 to 1⅛ inch round or square iron; flat iron in proportion. Is 27 inches long by 20 inches high, and 9 inches wide; Iron Lever, 26 inches long; Hickory Lever, 5 feet long. Total weight, 300 pounds.

Single Cutters $50 00

UPRIGHT POWER PRESS.

UPRIGHT LEVER PRESS.

DOUBLE ACTION CAM POWER PRESS.

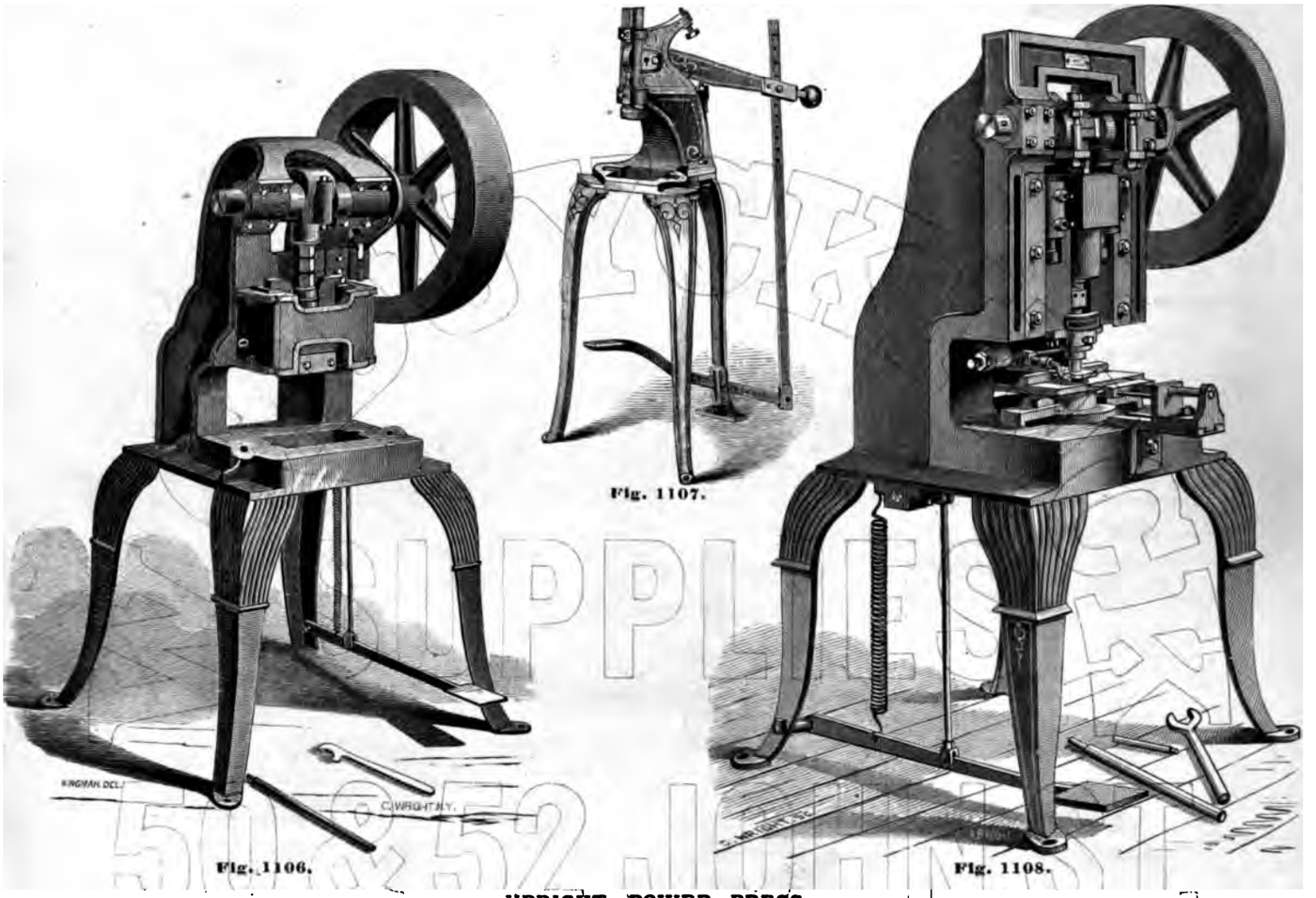


Fig. 1106.

Fig. 1107.

Fig. 1108.

UPRIGHT POWER PRESS.

No.	0	1	1½	2	3
Weight, lbs., complete, about	400	700	1000	1750	380
Size of opening in Bed, inch	3 x 5	5 x 5	6 x 9	8 x 8	14 x 21
Distance back, from Centre of Slide, inch	4	5	6	6	25
Distance from Bed to Bottom of Slide, when Slide is up, inch	4	5½	7	7	7
Motion of Slide, inch	1	1 and 1¾	1 and 1¾	1, 1¾, and 1½	1, 1¾, and 1½
Adjustment of Slide, inch	1	1¾	1½	1¾	1¾
Diameter of Balance Wheel, inch	18	20	26	30	36
Width " " "	3	3	4	4	5
Weight " " lbs.	65	110	240	300	600
Speed " " per minute, revolutions		100 to 150	110	75 to 125	75 to 100
Each	$125 00	200 00	260 00	300 00	475 00

Incline Power Presses same price as corresponding sizes above.

UPRIGHT LEVER PRESS.

No.	1	2	2½	3	4
Weight, lbs., complete, about	200	425	700	1200	1900
Size of opening in Bed, inch	4 x 4	6½ x 6½	10 x 10	14 x 16	16 x 21
Distance from Bed to Bottom of Slide, when Slide is up, inch	4	6½	6	6	8
Distance back from Centre of Slide, inch	4	5	7	10½	11
Each	$45 00	90 00	150 00	225 00	275 00

DOUBLE ACTION CAM POWER PRESS.

Scale, about three quarters of an inch to the foot.

Weight, lbs., complete, about	2000	Diameter of Balance Wheel, inch	20
Size of opening in Bed, round, inch	4	Width " " "	3¾
Distance from Bed to Bottom of Slide, when Slide is up, inch	6	Weight " " lbs.	360
Distance back from Centre of Slide, inch	6	Speed " " per minute, revolutions	100
Length of Stroke of Cutting Punch, "	¾	With Attachment for Feeding, as illustrated	$650 00
" " Drawing " "	3		

HYDRAULIC PUMPS AND PRESSES.

DOUBLE THROW PUMP.

(Fig. 1109.)

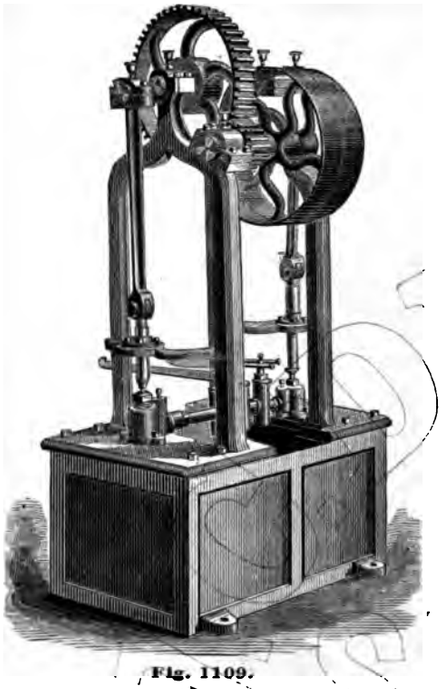


Fig. 1109.

TRIPLE THROW PUMP.

(Fig. 1110.)

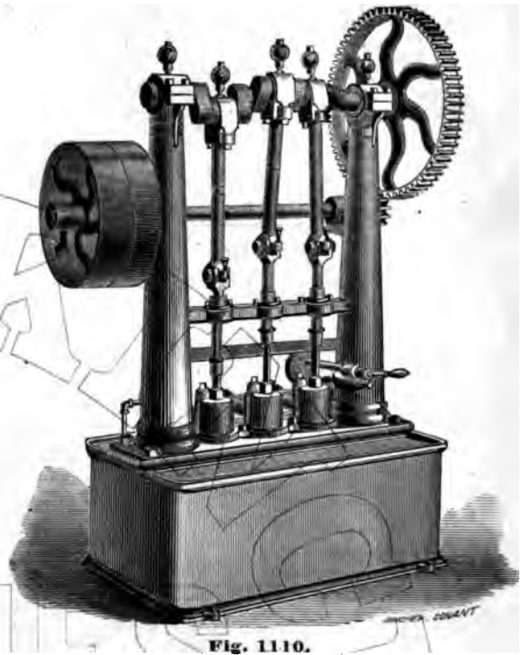


Fig. 1110.

COTTON SEED AND LINSEED OIL PRESSES.

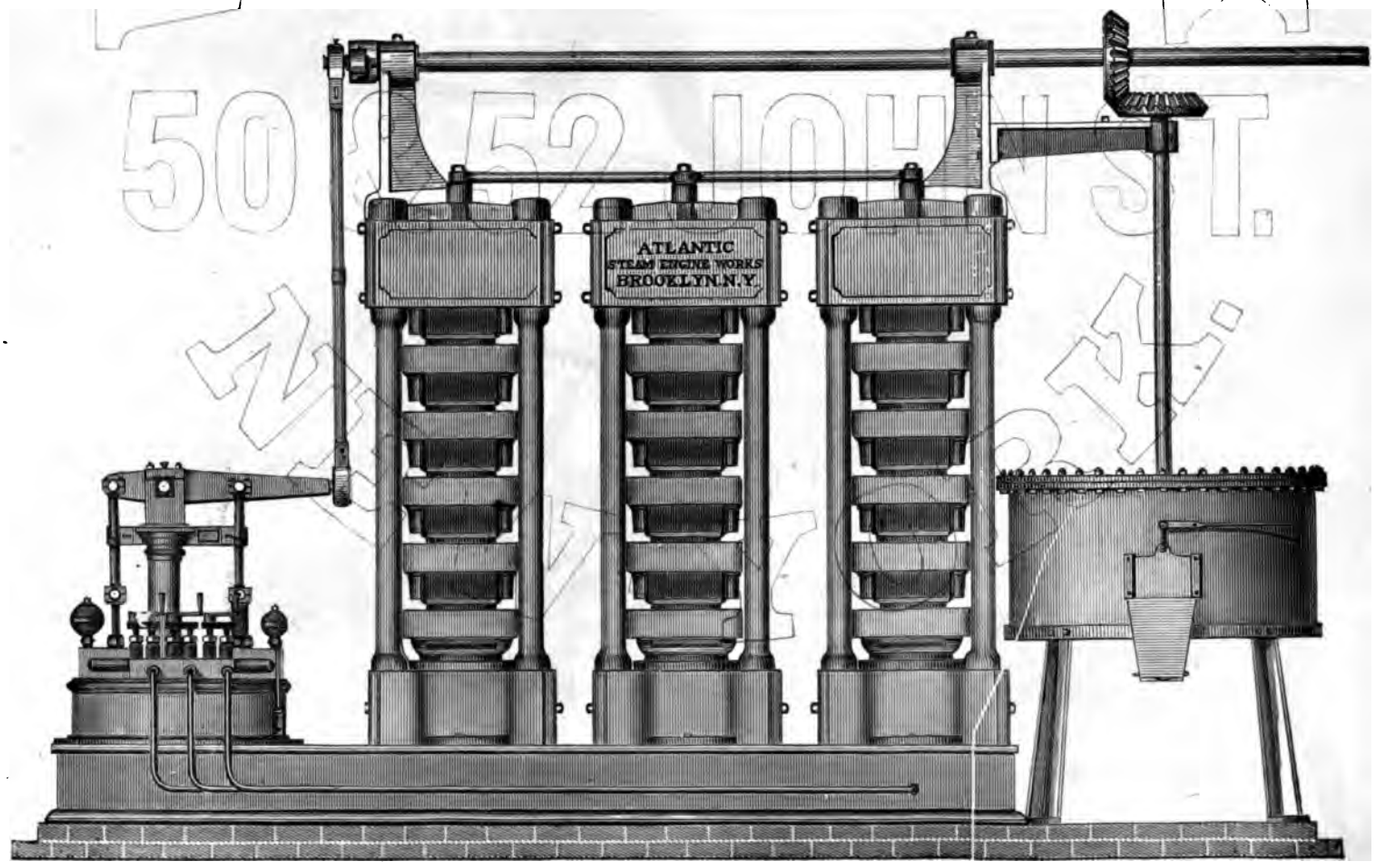


Fig. 1111.

Prices and Particulars on Application.

TAFT'S PUNCHING AND SHEARING MACHINES.

Fig. 1112.

Fig. 1113.

PATENT HAND SHEAR.

(Fig. 1112.)

No. 1 cuts ⅛ inch plate iron $25 00
" 2 " 3-16 " " 45 00
" 3 " ¼ " " 75 00
" 4 will cut 5-16 inch plate iron..... 105 00
" 5 " ⅜ " " 145 00
" 5½ " 1 " round or square bars, and ½ × 6 inch flat bars, with one man..... 208 00
" 6 cuts 7-16 inch plate iron..... 208 00
" 6½ " ½ " " 377 00
" 8 " 9-16 " " 345 00
" 9 will cut 1¼ round, or ⅝ × 6 inch flat bars. 345 00

PATENT HAND PUNCH.

(Fig. 1113.)

No. 1 punches ¼ inch hole in ⅛ inch plate iron, and 1¼ inches from centre of hole to edge of plate..... $25 00
" 2 punches 3-16 inch hole in 3-16 inch plate iron, and 2¼ inches from centre of hole to edge of plate.... 45 00
" 3 punches ¼ inch hole in ¼ inch plate iron, and 3½ inches from centre of hole to edge of plate..... 75 00
" 4 punches 5-16 inch hole in 5-16 inch plate iron, and 4 inches from centre of hole to edge of plate 105 00
" 5 punches ⅜ inch hole in ⅜ inch plate iron, and 6½ inches from centre of hole to edge of plate..... 145 00
" 6 punches 7-16 inch hole in 7-16 inch plate iron, and 6½ inches from edge of plate..... 208 00
" 7 punches ½ inch hole in ½ inch plate iron, and 6½ inches from edge..... 277 00
" 8 punches 9-16 inch hole in 9-16 inch iron, and 6½ inches from edge..... 345 00

PATENT COMBINED SHEAR AND PUNCH.

No. 1 cuts and punches ⅛ inch plate iron—punches 2 inches from edge of plate..... $48 00
" 2 cuts and punches 3-16 inch plate iron—punches 1⅝ inch from edge of plate..... 83 00
" 3 cuts and punches ¼ inch plate iron—punches 1½ inch from edge of plate..... 138 00
" 4 cuts and punches 5-16 inch plate iron—punches 2 inches from edge of plate..... 195 00
" 5 cuts and punches ⅜ inch plate iron—punches 2 inches from edge of plate..... 264 00
" 6 cuts and punches 7-16 inch plate iron—punches 2½ inches from edge of plate..... 345 00
" 7 cuts and punches ½ inch plate iron—punches 2½ inches from edge of plate..... 388 00

POWER PUNCH.

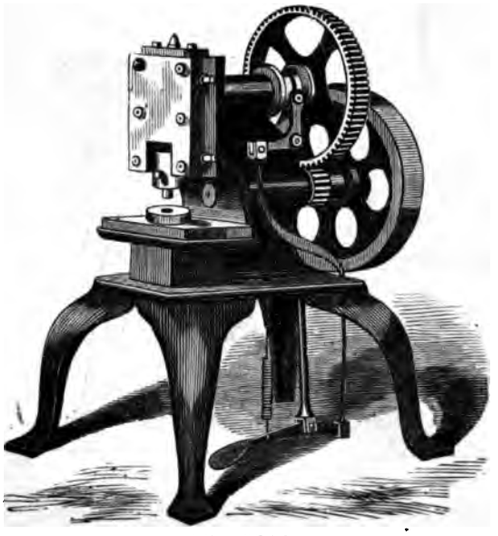


Fig. 1114.

POWER SHEARS.

For Power Machines.

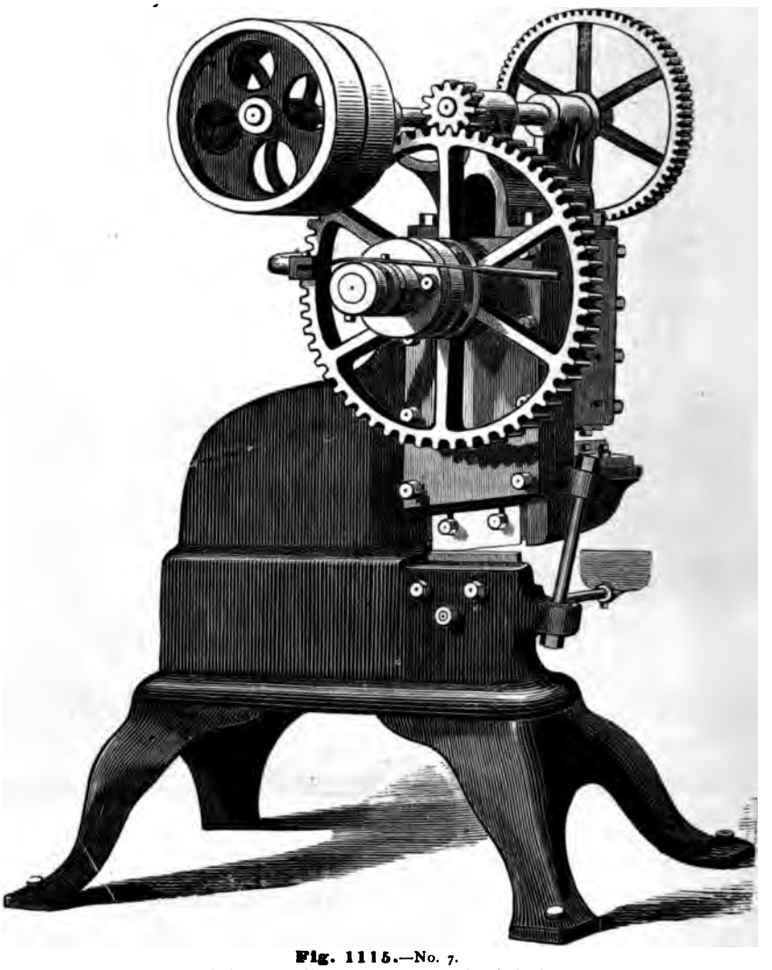


Fig. 1115.—No. 7.
Price on application, giving capacity desired.

BOILER PLATE SHEARS AND PUNCH.

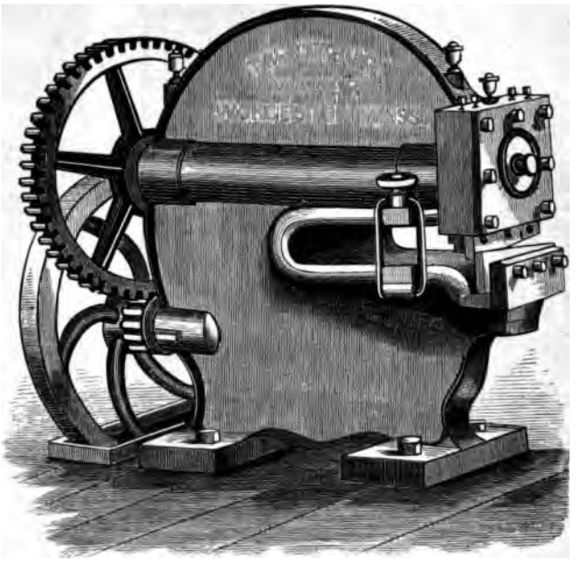


Fig. 1116.

No. 1. Works 14 inches from edge of plate... $375 00 No. 2. Works 24 inches from edge of plate... $800 00
No. 3. Works 26 inches from edge of plate $1200 00

POWER PUNCH.

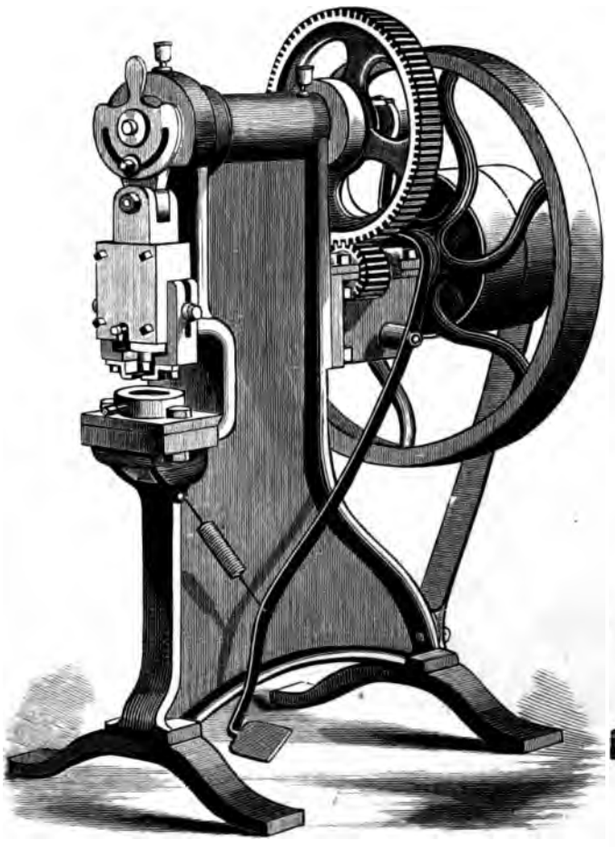


Fig. 1117.—No. 3.

No.	1	2	3	4	5	6	7	8
Punches Iron, inch	⅛	3-16	¼	5-16	⅜	7-16	½	¾
Each	$75 00	110 00	160 00	240 00	350 00	475 00	575 00	800 00

POWER NUT AND WASHER PRESS.

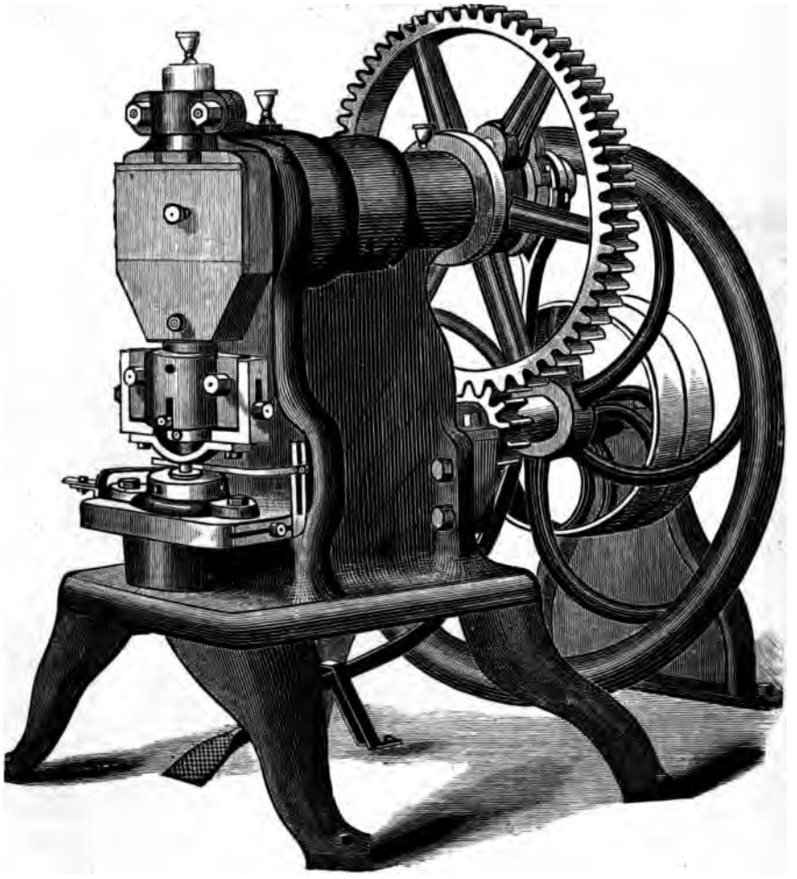


Fig. 1118.—No. 8.

No.	3	4	4½	5	6	7	8	9	10	11
Punches Iron, inch.	3-16	¼	5-16	⅜	½	⅝	¾	1	1¼	1½
Each	$225	250	300	400	550	675	800	950	1250	2050

TEAL'S IMPROVED POWER PUNCH.

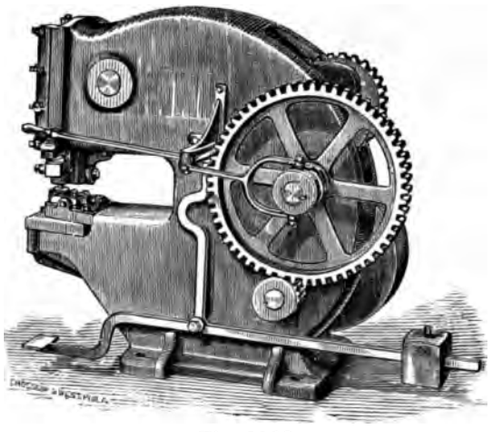


Fig. 1119.

(Fig. 1119.)

These machines are provided with a loose and a heavy fast pulley, and are made separately for punching, shearing plate and cutting off bar iron; and when desired, one machine can be furnished with attachments for all three purposes.

Our regular patterns for Boiler makers will punch 1 inch hole in ¾-inch iron, shear ¾-inch plate and cut off 1½-inch bar iron, and will punch and shear in the centre of 42-inch and 60-inch plates.

Machines made to order for any kind of work, from the lightest to the heaviest.

The die-seat is capable of very accurate adjustment with the Punch; and for Boiler makers the machine is made small at the end on which the die-seat rests, for punching flanged heads, angle iron, etc. Punch Stripper is also adjustable to any thickness of iron.

(Fig. 1120.)

The Vibrators, which give motion to the Punching and Shearing Heads, and which, as in other machines, have three surfaces exposed to great friction, are provided with an arrangement for taking up the wear, or lost motion; this can be done by the operator in a simple and easy manner, and will avoid the necessity of repairing.

The Die-seat, which holds the Dies, is capable of very accurate adjustment with the Punch.

For Boiler Makers, this machine will punch as small as a 12 inch diameter flanged boiler-head, and measures but 1½ inches from centre of Punch to the end of machine.

The Punch "Stripper" can be adjusted to any thickness of iron.

The Shears run when belt is on the tight pulley, but the Punch can be worked at will by the clutch-lever. Our regular pattern for Boiler Makers will punch and shear ¾ inch iron 20 inches from the edge.

Combination Punch and Shears	$850 00
With Shears on Angle and Single Punch, 21 inches, each	550 00
" " " " " 30 " "	625 00
Shearing Attachments, extra	40 00

IMPROVED COMBINED PUNCH AND SHEARS.

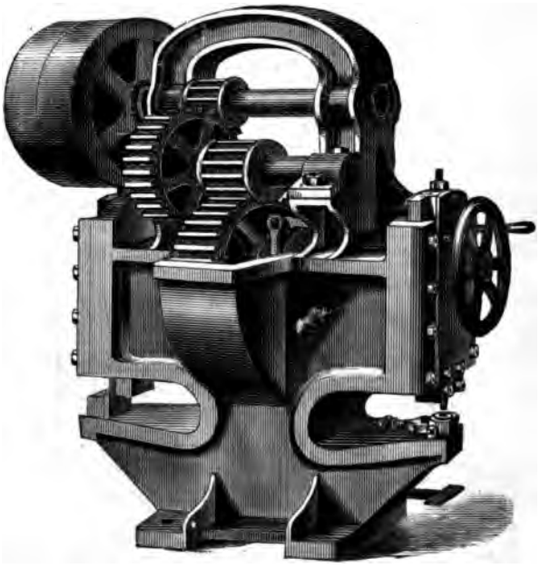


Fig. 1120.

Combination Shears and Punch for Hand or Power for ⅜ inch iron 15 inches from edge	$325 00
Boiler Makers' Post Drilling Machine, 30 inches reach to drill up to 3 inch hole in Boiler Plate, including Countershaft	225 00

DUDGEON'S PATENT HYDRAULIC PUNCH.

FOR RAILS.

Fig. 1121.

To punch hole for Fish-Plate, before or after laying the rails..... $250 00

Fig. 1122.

To punch hole for Spike..... $150 00

In ordering it is advised to send a piece of rail as sample, that the punch may be made to fit close

PATENT TRACK RATCHET DRILL AND SOCKET WRENCH.

Fig. 1123.

Track Drill, complete..... $15 00
Socket Wrench..... 5 00

WILLIAMS' PATENT COMBINATION RATCHET WRENCH AND DRILL.

For fishing broken or new rails, bridge building, and general railroad use.

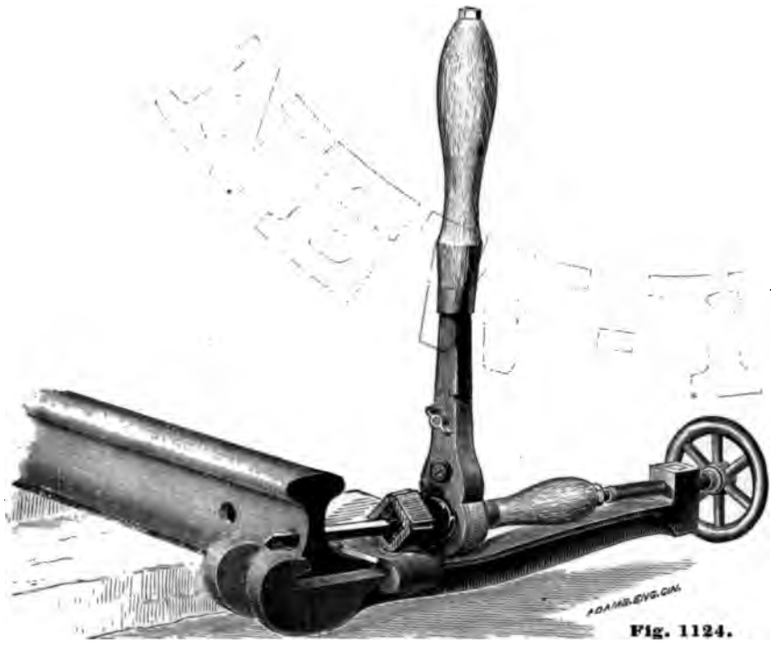


Fig. 1124.

Full Set Tools..... $15 00

Fig. 1125.

Reversible Ratchet Wrench..... $7 50

DUDGEON'S HYDRAULIC JACKS.

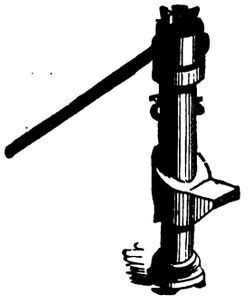


Fig. 1126.—Ground Lifting Jack

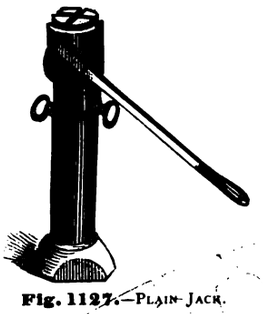


Fig. 1127.—Plain Jack.

Fig. 1128.—Base Jack.

To lift or press	4 tons,	and run out	12 inches	and lift from the ground	$60 00
"	4	"	24	" " "	65 00
" "	7	"	12	" " (Plain Jack)	70 00
" "	7	"	24	" "	75 00
" "	7	"	12	and lift from the ground	85 00
" "	7	"	12	with wide base for locomotive shops	80 00
" "	7	"	18	" " " "	85 00
" "	7	"	24	and lift from the ground	90 00
" "	10	"	12	(Plain Jack)	80 00
" "	10	"	18	" "	100 00
" "	10	"	12	and lift from the ground	100 00
" "	10	"	12	with wide base for locomotive shops	95 00
" "	10	"	18	" " " "	110 00
" "	15	"	12	(Plain Jack)	100 00
" "	15	"	12	with wide base for locomotive shops	125 00
" "	15	"	12	and lift from the ground	150 00
" "	15	"	18	with wide base for locomotive shops	150 00
" "	20	"	12	and lift from the ground	200 00
" "	20	"	12	with wide base for locomotive shops	150 00
" "	20	"	12	(Plain Jack)	120 00
" "	30	"	9	" "	150 00
" "	30	"	12	" "	175 00
" "	30	"	9	with wide base for locomotive shops	170 00
" "	30	"	12	" " " "	200 00
" "	30	"	12	and lift from the ground	250 00
" "	60	"	9	with cistern and force pump outside	250 00
" "	60	"	12	" " " "	275 00
" "	90	"	9	with cistern and force pump outside	350 00
" "	90	"	12	" " " "	375 00
" "	100	"	12	" "	400 00
" "	120	"	7	" "	450 00

Larger sizes made to order.

DUDGEON'S PATENT CRANK PIN JACK.

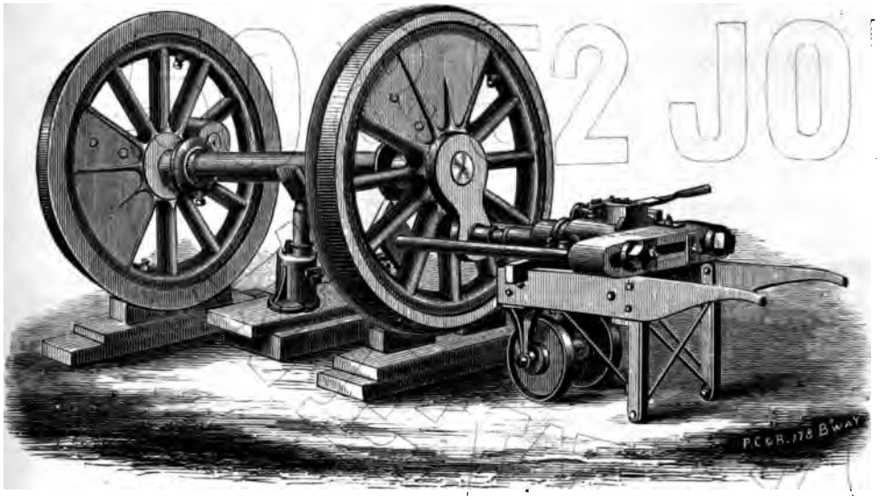


Fig. 1129.

HYDRAULIC PULLING JACKS.

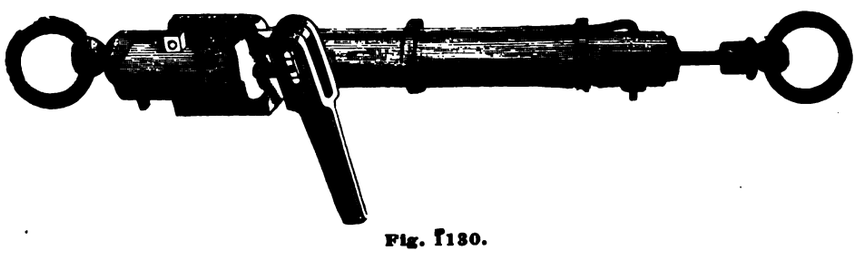


Fig. 1130.

CLAW OR GROUND LIFTING HORIZONTAL JACK.

Fig. 1131.

BROAD BASE OR LOCOMOTIVE HORIZONTAL JACK.

Fig. 1132.

10, 15, or 20 tons of this style, to run out 2 feet, made to order.

These Jacks run out their entire length horizontal or vertical, and will run out 6 inches further than the old kind while standing the same height; that is to say, a Jack to run out 18 inches will measure little if any more (when down) than one that runs out 12 inches; the Claw comes much nearer the ground, is made of wrought iron, and can be taken off when not needed; they are less liable to get out of order, are easily repaired, and are considered a far superior Jack by all who have used them. Prices and sizes same as the old kind.

(Fig. 1130.)

These Hydraulic Pulling Jacks are for stretching rigging, testing chains and ropes, pulling stumps, hoisting heavy weights, etc., in engine rooms or other places, especially where there is but little space.

These Jacks differ from the others by their being extended when commencing to work, and then being pumped together. The force pump is attached to the side, and is worked by a lever, the same as the Hydraulic Jack.

To stretch	2	feet	and pull	8 tons	$200 00
"	2	"	"	10 "	240 00
"	2	"	"	15 "	300 00
"	2	"	"	20 "	350 00
"	2	"	"	30 "	450 00

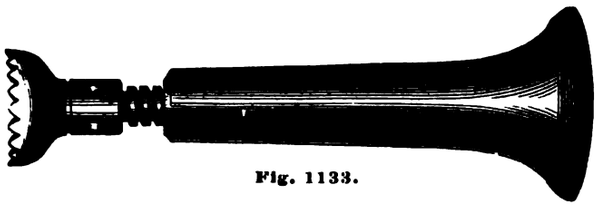


Fig. 1133.

JACK SCREWS—BELL BOTTOM.

Length, inches.....	6	8	10	12	14	16	20	24
Diameter Screw, 1¼ inches,	$2 50	3 00						
" " 1½ "	3 00	3 50	3 75	4 00				
" " 1¾ "	3 25	3 75	4 00	4 50	4 75	5 90		
" " 2 "	4 00	4 25	4 75	5 25	6 00	7 00	8 00	10 00
" " 2¼ "		6 50	7 00	7 50	8 00	9 00	10 00	12 00
" " 2½ "		7 50	8 00	8 50	9 00	9 50	11 00	13 00

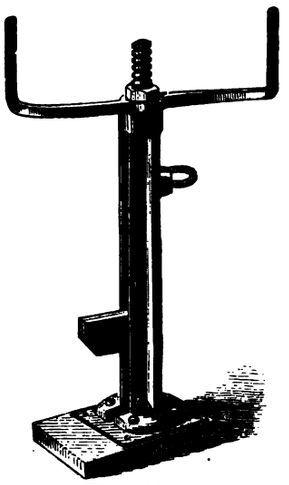


Fig. 1134.

PATENT TRACK JACK.

To Lift 17½ Inches.

(Fig. 1134.)

This cut represents a Track Jack that will lift the rail, with all the ties, and hold it while repairs are made—weight only 40 lbs.—saves two men's work in every gang—never throws the track out of line. It can be used by any one.

The screw and foot forged in one piece of best wrought iron; the diameter of screw is 1½ inches. Handle, nut, and base plate wrought iron.

Per dozen.....$96 00

BALL'S PATENT TELESCOPIC JACK SCREWS.

(Figs. 1135 and 1136.)

No.	Stand.	Screw.	Net Rise.	Whole Length.	Fig. 1135.	Fig. 1136.
1	10 inch.	14 inch.	11 inch.	20 inch.	$20 00	$35 00
2	14 "	20 "	16 "	30 "	28 00	42 00
3	17 "	27 "	23 "	40 "	30 00	45 00
4	21 "	35 "	31 "	52 "	33 00	48 00
5	25 "	40 "	36 "	61 "	35 00	50 00

Fig. 1135.

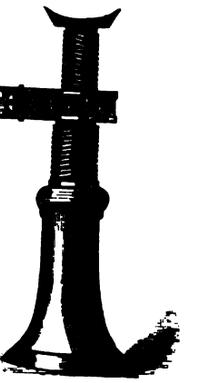


Fig. 1136.

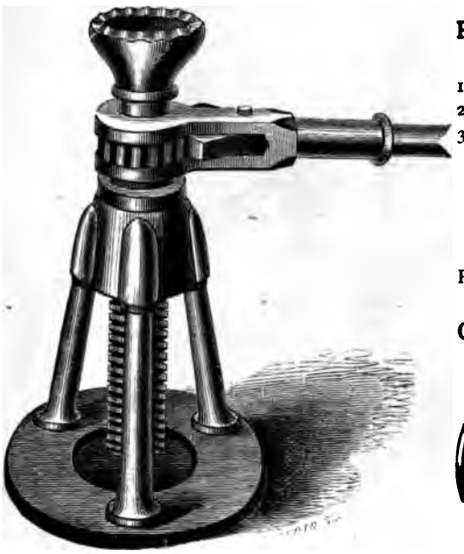


Fig. 1137.

RATCHET LIFTING JACKS.

(Fig. 1137.)

18 inch, per pair..... $75 00
24 " " 100 00
36 " " 125 00

LIFTING AND CARRYING JACKS.

(Fig. 1139.)

Per Pair..... $175 00

CAST IRON JACK SCREWS.

With Nut to let into a wood block.

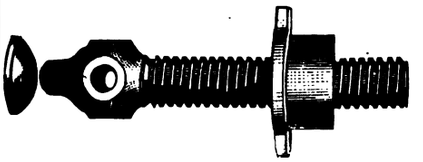


Fig. 1138.

3 × 22 inches long, each..... $6 00
4 × 24 " " " 8 00

Fig. 1139.

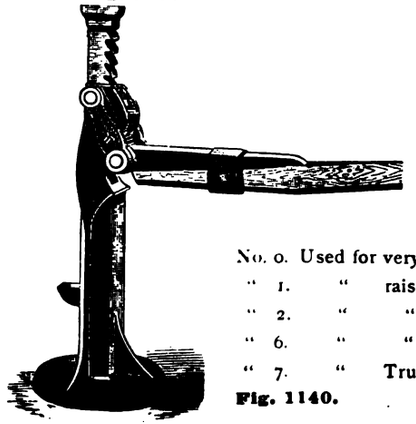


Fig. 1140.

LEFFEL'S PATENT JACK.

	Size of Wrought Bar with Hook.	Height when not in use.	Weight.	
No. 0. Used for very heavy lifting.....	3 × 2	30 inches.	180 lbs.	$46 0
" 1. " raising Locomotives.....	2 × 2	29 "	128 "	25 0
" 2. " " Cars.....	1¾ × 1¾	29 "	90 "	20 0
" 6. " " and ballasting Track.....	1¼ × 1¼	19 "	35 "	9 0
" 7. " Truck Box purposes.....	1¼ × 1¼	12½ "	25 "	8 0

CLAW JACKS.

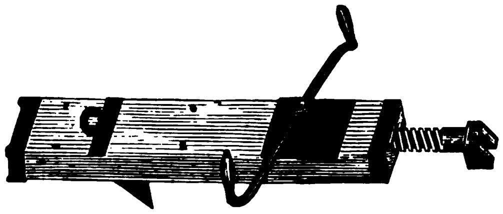


Fig. 1141.

Length of Screw,	24	inch.,	Compound Gear,	2	inch.	....	$20 00
" "	30	"	" "	2	"	....	22 00
" "	33	"	" "	2	"	....	23 00
" "	36	"	" "	2	"	....	24 00
" "	33	"	" "	2¼	"	....	29 00
" "	36	"	" "	2¼	"	....	32 00
" "	42	"	" "	2¼	"	....	36 00
" "	36	"	" "	2¾	"	....	50 00
" "	42	"	" "	2¾	"	....	55 00
" "	48	"	" "	2¾	"	....	60 00

TIMBER JACKS.

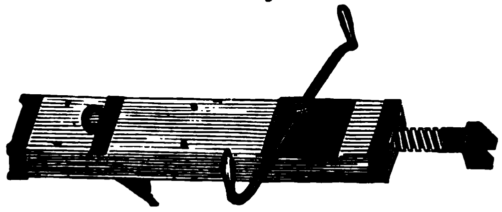


Fig. 1142.

Length of Screw,	30	inch.,	Compound Gear, Size of Screw,	2	inch.	....	$22 00
" "	33	"	" " " "	2	"	....	23 00
" "	36	"	" " " "	2		....	24 00

PLANKER JACK.

Length of Screw	30	inch.,	Compound Gear, Size of Screw,	2	inch.	....	$19 00
" "	33	"	" " " "	2	"	....	19 50
" "	36	"	" " " "	2	"	....	20 00
" "	42	"	" " " "	2¼	"	....	28 00

SUGAR AND COTTON SCREWS.

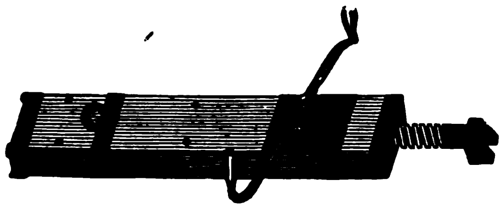


Fig. 1143.

Length of Screw,	24	inch.,	Compound Gears, Size of Screw,	2	inch	....	$18 00
" "	30	"	" " " "	2	"	....	19 00
" "	33	"	" " " "	2	"	....	19 50
" "	36	"	" " " "	2	"	....	20 00

COTTON SCREWS.

Length of Screw,	24	inch.	Compound Gear Size of Screw,	2¼	inch	....	$24 00
" "	30	"	" " " "	2¼	"	....	25 00
" "	36	"	" " " "	2¼	"	....	26 00
" "	42	"	" " " "	2¼	"	....	28 00
" "	36	"	" " " "	2¾	"	....	45 00
" "	42	"	" " " "	2¾	"	....	48 00
" "	48	"	" " " "	2¾	"	....	52 00

Any size of Sugar, Cotton, Claw, Jack, or Planker Screws, not on the lists, made to order

SCOFIELD'S SHAFTING STRAIGHTENER.

For Shafting, Axles, Tubes, Rails, etc.

No. 1 for 1 inch round iron, weight about 12 lbs..... $20 00

No. 1½ for 1½ inch round iron, weight about 25 lbs. 25 00

No. 2 for 2 inch round iron, weight about 35 lbs...... 30 00

No. 2½ for 2½ inch round iron, weight about 55 lbs. 38 00

No. 3 for 3 inch round iron, weight about 90 lbs...... 50 00

No. 4 for 4 inch round iron, weight about 130 lbs..... 75 00

The large machines will straighten iron down to the smallest size, but are not convenient for it on account of their length and weight.

Fig. 1144.

CROWBARS.

Fig. 1145.—SINGLE.

Fig. 1146.—DOUBLE OR WEDGE.

Fig. 1147.—LINING BAR.

Fig. 1148.—PINCH BAR.

Fig. 1149.—PINCH BAR WITH HEEL.

Fig. 1150.—CLAW BAR.

Fig. 1151.—SHACKLE BAR.

Fig. 1152.—TAMPING BAR.

Solid Steel, per lb.... ... .$ Steel Pointed, per lb..................$

LITTLE GIANT RAIL STRAIGHTENER.

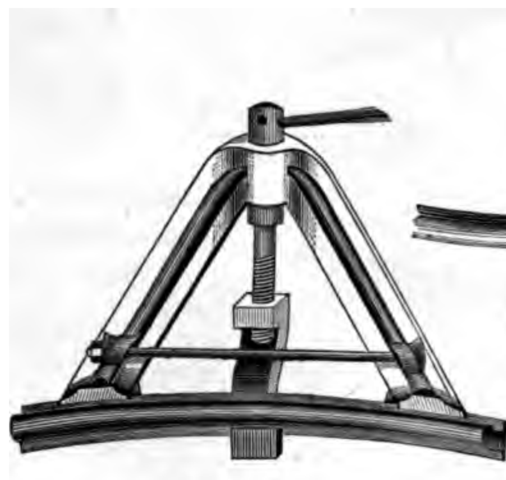


Fig. 1153.

Each... ....$28 00

FORGED IRON RAIL STRAIGHTENER.

Fig. 1154.

Each.......................... ... .$35 00

WILLISTON'S PATENT MACHINE.

TO CURVE AND STRAIGHTEN RAILS.

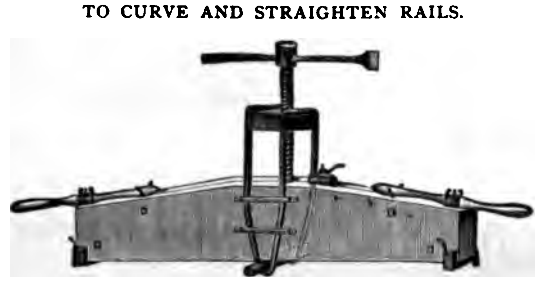


Fig. 1155.

Each..................... ....$75 00

HATCHETS.

Fig. 1156.—Claw.

Fig. 1157.—Shingle.

No. 1—Claw, per dozen	$9 00		No. 1—Shingle, per dozen	$8 00	
" 2— " "	9 50		" 2— " "	8 50	
" 3— " "	10 00		" 3— " "	9 00	

BROAD HATCHETS.

Fig. 1158.

Cut, inches	5	6	7½	8½	9
Per dozen	$13 00	16 50	19 50	22 00	25 00

RAILROAD ADZES.

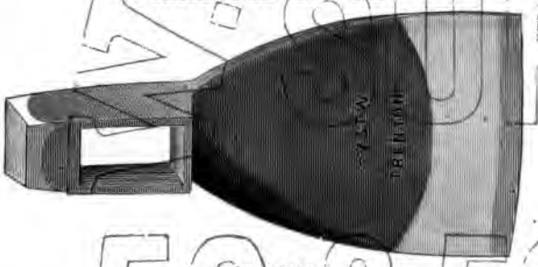


Fig. 1159.

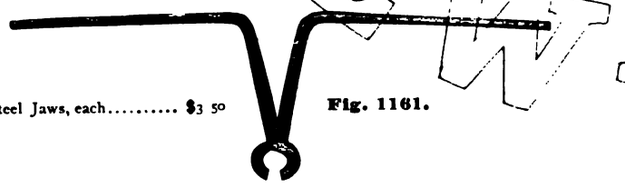
Per dozen ..... $10 00 to 25 00

Fig. 1160.

HANDLED AXES.

4 to 6 lbs. per dozen ..... $20 00 to 30 00

RAIL TONGS.



Cast Steel Jaws, each $3 50

Fig. 1161.

TRACK CHISEL.

Per lb., with Eye $0 50

Fig. 1162.

Cast Steel Chisel and Tongs, for Cutting Rail.

Each $2 00

Fig. 1163.

SPIKE MAULS.

Fig. 1164.

Solid Cast Steel, 6 to 12 lbs. ..... $
Cast Steel Face and Pane, 6 to 12 lbs. .....
Under 6 lbs., per lb., extra .....

Patent Solid Eye California Surface Mining Pick. Curved.

Fig. 1165.

Weight, lbs.	3	3½	4	4½	5
No.	1	2	3	4	5
Per dozen	$15 00	15 50	16 00	17 00	18 00

MATTOCKS.

Fig. 1166.

Long Cutter, per dozen	$23 50
Short " "	23 00
Picked Mattocks, per dozen	23 00

PATENT SOLID EYE DRIFTING OR MINERS' PICKS.

Fig. 1167.

Weight, lbs.	3	4	4½	5	6
No.	1	2	3	4	5
Per dozen	$13 00	14 00	14 50	15 00	16 00

POLL PICKS.

Fig. 1168.

Weight, lbs.	3½	4	4½	5	6
No.	1	2	3	4	5
Per dozen	$13 00	14 00	14 50	15 00	16 00

COAL PICKS.

Fig. 1169.

Weight, lbs.	3½	4	4½	5	6
No.	1	2	3	4	5
Per dozen	$12 00	13 50	14 00	15 00	16 00

COAL POLL PICKS.

Fig. 1170.

Weight, lbs.	3½	4	4½	5	6
No.	1	2	3	4	5
Per dozen	$13 00	14 00	14 50	15 00	16 00

Fig. 1171.

PATENT SOLID EYE RAILROAD PICKS.

No. 0—4 lbs., per dozen	$14 00		No. 4—6 lbs., per dozen	$16 00	
" 1—4½ " "	14 50		" 5—6½ " "	17 00	
" 2—5 " "	15 00		" 6—7 " "	18 00	
" 3—5½ " "	16 00		" 7—8 " "	19 00	

Fig. 1172.

RAILROAD TAMPING PICKS.

No. 17—7 lbs., per dozen ..... $20 00 No. 17—8 lbs., per dozen $22 00

SHOVELS.

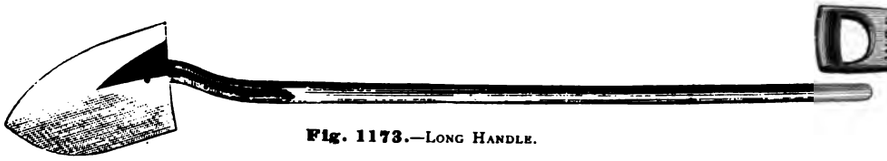


Fig. 1173.—Long Handle.

Fig. 1174.—D Handle.

AMES.

No.	0	1	2	3	4	5	6
Square Point, Plain Back, Black	$14 00	14 50	15 00	15 50	16 50	17 75	18 75
" " Strap " "	14 50	15 00	15 50	16 00	17 00	18 00	19 00
Round " Plain " "		15 00	15 50	16 00	17 00	18 00	19 25
Square " " " Polished		15 50	16 00	16 50			
Round " " " "		16 00	16 50	17 00			
Square " " " " Solid Cast Steel			18 00	19 00			
Round " " " " " "			19 00	20 00			
Square " " " Black, " "			16 00	17 00			
Round " " " " " "			17 00	18 00			
Square " Strap " Polished "			16 00	17 00	18 00		
Round " " " " "			17 00	18 00	19 00		

SANDERSON.

No.	0	1	2	3	4	5	6
Square Point, Strap Back, Polished Cast Steel			11 00	11 50	12 50		
Round " " " " "			11 50	12 00	13 00		

ROWLAND.

No.	0	1	2	3	4	5	6
Square Point, Strap Back, Polished Cast Steel			12 50	13 00	14 00	15 00	
" " " Cast Steel Edge			14 50	15 00	16 00	17 00	
Round " " " "			14 50				

OLD COLONY.

No.	0	1	2	3	4	5	6
Square Point, Polished		16 00	16 00	17 00	18 00	19 00	20 00
Round " "		16 00	16 00	17 00			
Square " Black			15 00	15 50	16 50	17 75	18 75
Round " "			15 50	16 00	17 00	18 25	19 25

SCOOPS.

Fig. 1175.

Fig. 1176.

(Fig. 1175.)

No.	2	3	4	5	6	7
Ames, Cast Steel, Polished	$18 00	18 75	19 50	20 25	21 00	22 00
Sanderson, Best Steel, Polished	14 00	14 50	15 00	15 50	16 25	17 00
" Extra Iron, Half Polished	10 50	11 00	11 50	12 00	12 50	13 25
" " " Black	10 00	10 50	11 00	11 50	12 00	12 75
Rowland, Steel, "	14 00	14 50	15 00	15 50	16 00	
" " Polished	15 00	15 50	16 00	16 50	17 00	
" " Half "	14 50	15 00	15 50	16 00	16 50	
" Cast Steel, Black	15 00	15 75	16 50	17 25	18 00	
" " " Polished	16 00	16 75	17 50	18 25	19 00	
" " " Half Polished	15 50	16 25	17 00	17 75	18 50	
Old Colony, Cast Steel, Strapped	17 00	17 75	18 50	19 25	20 00	
Saunders	9 50	10 00	10 50	11 00	11 50	

DEAN'S PATENT SCREENING SCOOPS AND SHOVELS, WITH MALLEABLE IRON FRAMES.

(Fig. 1176.)

Space, inch	¼	½	¾	1
Size, inch	12 × 18	12 × 18	10 × 18	10 × 16
Per dozen, A	$49 00	46 00	43 00	40 00
" B	45 00	42 00	39 00	36 00
" C	33 00	29 00	28 00	27 00
" D	28 00	24 00	23 00	22 00

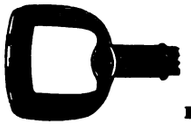


Fig. 1177.

MALLEABLE IRON SHOVEL HANDLES.

Per dozen $5 00

STEBBINS & SMITH MFG. CO.
50 & 52 JOHN ST.
NEW SUPPLIES

STONE HAMMER.

Solid Cast Steel, 6 to 24 lbs., per lb..... cts.
Extra " " Face and Pane, 6 to 24 lbs., per lb..... "
Under 6 lbs., extra per lb..... 2 "

Fig. 1178.

Double Faced Stone Hammer.

Solid Cast Steel, 6 to 24 lbs., per lb..... cts.
Extra " " Face and Pane, 6 to 24 lbs., per lb..... "
Under 6 lbs., extra per lb. ... 2 "

Fig. 1179.

MASON'S HAMMER.

Solid Cast Steel, 3 to 10 lbs., per lb..... cts.
Extra " " Face and Pane, 3 to 10 lbs., per lb., "

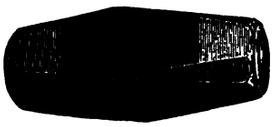
Fig. 1180.

STONE SLEDGE.

Solid Cast Steel, 6 to 24 lbs., per lb..... cts.
Extra " " Face and Pane, 6 to 24 lbs., per lb..... "

Fig. 1181.

STRIKING HAMMER.



Solid Cast Steel, 6 lbs. and upward, per lb..... cts.
Extra " " Face and Pane, 6 lbs. and upward, per lb..... "
Under 6 lbs., extra per lb..... 2 "
Extra per lb. on all goods for full polish..... 2 "

Fig. 1182.

HAND DRILLING HAMMER.

Solid Cast Steel, per lb., 50 cts.

Fig. 1183. **Fig. 1184.**

COAL SLEDGE.

Fig. 1185.

MILL PICK.

Fig. 1186.

Coal Sledges, Solid, 5 to 9 lbs., per lb. ..... cts.
" " Extra Steel Face, 5 to 9 lbs., per lb..... "
Mill Picks, superior quality, 2 to 4 " " doz..... "

BELGIAN STONE RAMMER.

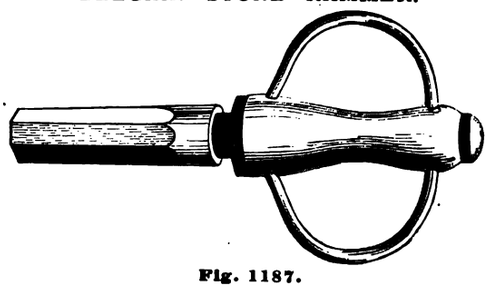


Fig. 1187.

Salisbury Iron, Cast Steel Faced Locust Plug, Hickory Handle, each..... $15 00

SAND RAMMER.

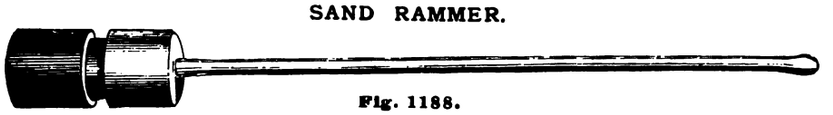


Fig. 1188.

Cast Iron Butt, Locust Plug and Hickory Handle, each..... $5 00

PUDDLING BAR.

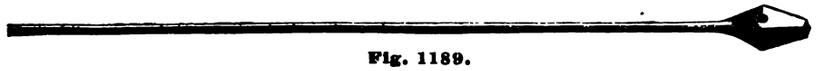


Fig. 1189.

Solid Cast Steel Head, per lb. $0 15

COBBLE STONE RAMMER.

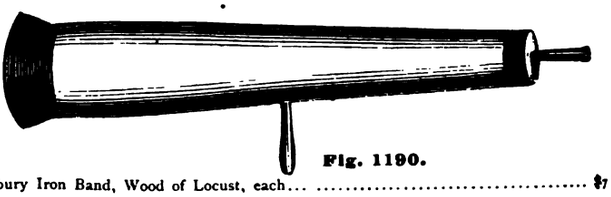


Fig. 1190.

Salisbury Iron Band, Wood of Locust, each..... $7 50

COBBLE STONE PAVING HAMMERS.

Fig. 1191.

Cast Steel Blade and Butt, per dozen..... $36 00

BELGIAN STONE PAVING HAMMERS.

Fig. 1192.

Salisbury Iron, Cast Steel Faced and Pointed, per dozen..... $36 00

DRILLS, PLUGS, AND FEATHERS.

Fig. 1193.

Fig. 1194.

Per lb..... $0 40

SPOON OR SCRAPER.

Fig. 1195.

Each..... $2 00

CHURN DRILLS.

Fig. 1196.

Cast Steel all sizes, per lb..... $0 30

SCRAPERS.

Fig. 1197.

Size of Scraper, inch.	Ordinary. Iron Back.	Doty's Patent Revolving. Wood Bottom.	Iron Bottom.	Steel Bottom.
26	$6 00	$16 00	$17 50	$19 00
30	7 50	16 50	18 00	19 50
32	9 00	17 00	18 50	20 00
34	12 00	17 50	19 00	20 50
36	14 00	18 00	19 50	21 00
36 extra large...	19 00			

RAILROAD CART, IRON AXLES.

Each..... $75 00

Fig. 1198.

SAND SCREENS.

(Fig. 1199)
24 inch, each..... $5 00
26 " " 6 15

COAL SCREENS.

(Fig. 1200.)
27 inch, each..... $12 00
33 " " 15 00

Fig. 1199. Fig. 1200.

PIONEER STUMP PULLER.

Fig. 1201.

No. 1, ... $95 00 No. 2..... $75 00 No. 3..... $60 00

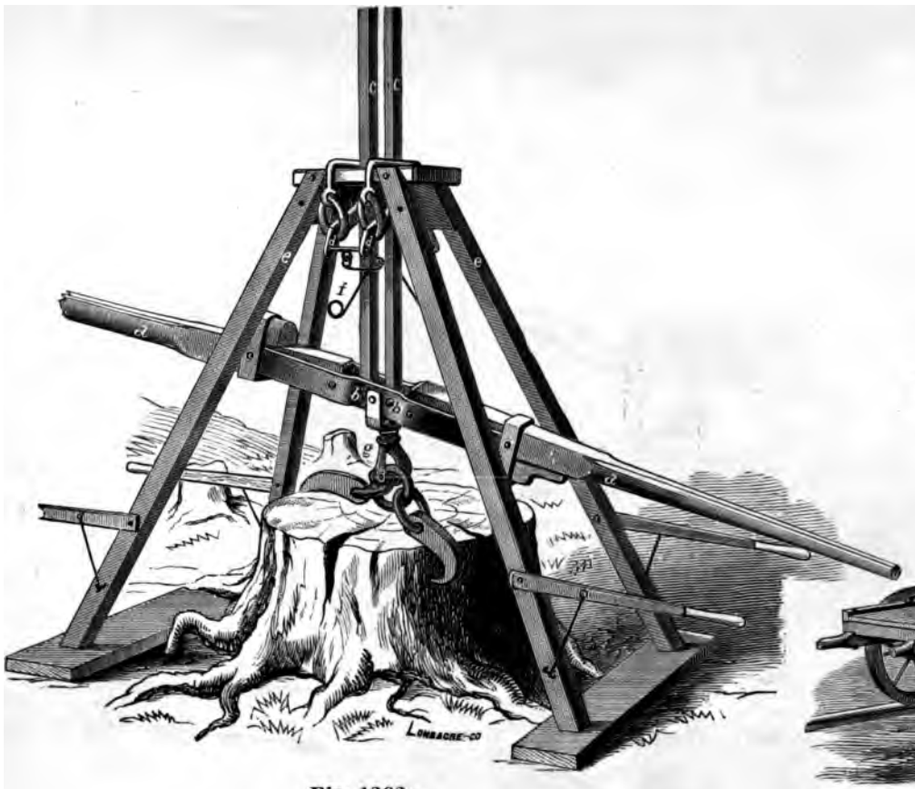


Fig. 1202.

Fig. 1203.

THE LITTLE GIANT IMPROVED STUMP PULLER AND ROCK EXTRACTOR.

No. 1 Machine will raise from 20,000 to 40,000 lbs.; No. 2 Machine from 40,000 to 60,000 lbs., which is sufficient to raise any stump that is profitable to pull, green or otherwise.

No. 1 Machine..... $65 00 No. 2 Machine..... $80 00

Which includes Grappling Hooks, a strong Cable Chain, or a set of Rings for pulling grubs.

Extra Cable, Hooks, or Rings, for No. 1 Machine..... $4 00

" " " " " 2 " 6 00

HAND CARS.

No. 1—Double Frame Car, 20¼ inch Wrought Spoke Wheel							$75 00
" 2— " " " 20¼ " Plate Wheel							75 00
" 1—Telegraph Car, Brass Gear'g, 1¼ in. Steel Axles, 24 in. Wheel, Cast Walking Beam,							105 00
" 2— " " " " 1⅛ " " 24 " Wrought "							105 00
" 3— " " " " 1⅛ " " 20¼ " Cast "							95 00
" 4— " " " " 1 " " 20¼ " Wrought "							95 00
" 5— " " " " 1 " " 20¼ " Pat. Ratchet Crank,							95 00
" 1—Ruble Car, 19 inch Plate Wheel							55 00
" 1—Iron Lorey Car							105 00

Track Gauge, Heavy..... $3 00 **Track Gauge,** Light..... $1 50 **Fog Signals,** per gross..... $10 00

Sharts' Portable Railway Switch, or Car Replacer, per pair..... $50 00

PURVES' PATENT PORTABLE RAILROAD SWITCH.

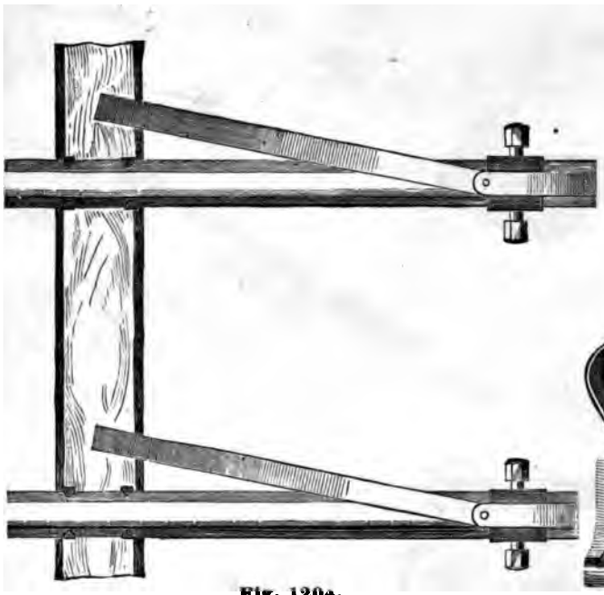


Fig. 1204.

Per Pair..... $50 00

Rails, Frogs, Spikes, etc., furnished.

We are prepared to furnish, at short notice, various styles of

RAILWAY SWITCH STANDS,

Cuts of some of which we present below.

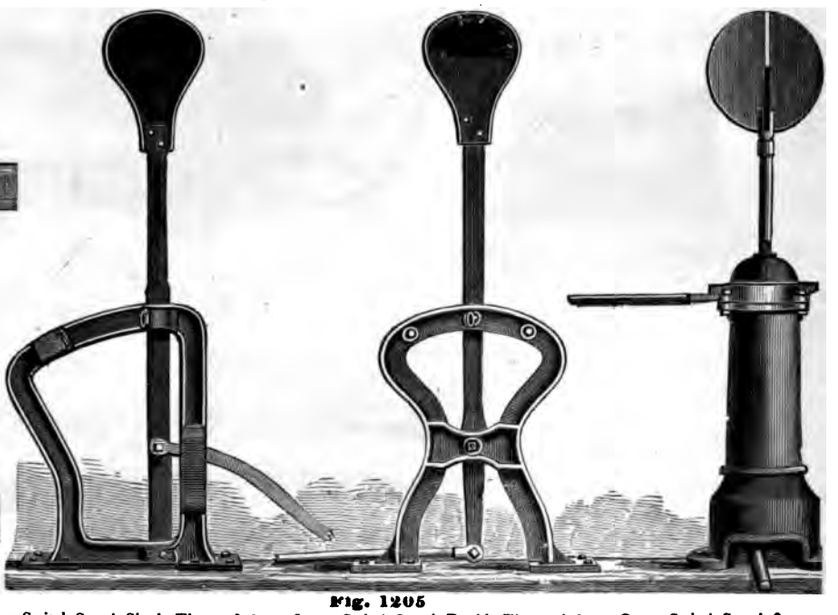


Fig. 1205

Lever Switch Stand, Single Throw, $18 00—Lever Switch Stand, Double Throw, $16 00—Crank Switch Stand $25 00

Fig. 1206.

Fig. 1207.

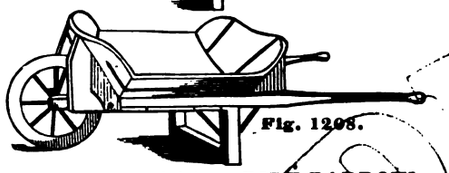


Fig. 1208.

CANAL, RAILROAD, or DIRT BARROW.

(Fig. 1206.)

SET UP IN RUNNING ORDER, READY FOR USE.

Per doz.	$22 50
" With Extra wide Tire	24 00
" " Bolted Wheels	25 00
" " Iron "	28 50
" " " Trays	100 00
" Knocked down and packed for shipment, less,	1 50

STONE BARROW.

(Fig. 1207.)

Per doz.	$48 00
" Packed for shipment, less	2 50

COAL BARROW.

(Fig. 1208.)

Large Size, per doz.	$60 00
Medium, "	48 00
Packed for shipment, less per doz.	2 50

NEW YORK BARROW.

TRAYS, WHEELS, IRONS, NAILS, AND DIRECTIONS.

Fig. 1209.

When packed for shipment they occupy cubic feet; weight, 50 lbs. each. We pack in half dozen lots.

When packed for shipment . . . $21 00

Which is $1.50 per dozen less than when ready for use.

COAL CARS.

Fig. 1210.

Half Ton, each	$200 00
One " "	250 00

BARROWS FOR PIG METAL.

Size H., Weight, 78 lbs., each	$16 00
" Fitted to receive wooden sides, each	16 00

Fig. 1211.

Size I., each	$20 00
Two-Wheel Barrows, each	38 00

COAL BARROWS.

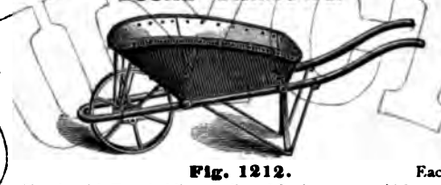


Fig. 1212.

	Each.
Size A, with Tray holding 300 lbs. of Coal, greatest width of Tray, 30 inches, weight of Barrow, 135 lbs., lifting weight, 28 lbs.	$26 00
Size B, with Tray holding 400 lbs. of Coal, greatest width of Tray, 36 inches, weight of Barrow, 145 lbs., lifting weight, 36 lbs	29 00
Size C, with Tray holding 260 lbs. of Coal, greatest width of Tray, 25 inches, especially designed for use in coal bunkers, weight of Barrow, 135 lbs., lifting weight, 31 lbs.	26 00
Size D, with Tray holding 250 lbs. of Coal, weight of Barrow, 98 lbs.	20 00
Size E, with Tray holding 4 bushels of Coke or Charcoal, weight of Barrow, 126 lbs.	28 00

This Barrow is expressly designed for carrying Coke, Charcoal, or other equally light material, and is not intended for use as a Coal Barrow.

DIRT BARROWS.

Fig. 1213.

	Each.
Size No. 4, with Tray, made of No. 16 iron, holding 3 cubic feet of Earth, weight of Barrow, 75 lbs., lifting weight, 20 lbs.	$12 00
Size No. 4½, with Tray, made of No. 14 iron. Same size as No. 4, weight of Barrow, 78 lbs., lifting weight, 22 lbs.	12 50
Size No. 5, with Tray, made of No. 14 iron, holding 4 cubic feet of earth, weight of Barrow, 81 lbs., lifting weight, 21 lbs.	13 50
Size No. 6, with Tray, made of No. 14 iron, holding 5 cubic feet of earth or 200 lbs. of Coal, adapted for same use as No. 5, or small Coal Barrow, weight of Barrow, 90 lbs., lifting weight, 22 lbs.	15 00

WAGON TRUCKS.

Fig. 1214.

Each . . . $17 00

BAGGAGE TRUCKS.

Fig. 1219.

Each . . . $38 00

MINING BARROWS.

We also make the foregoing sizes, from No. 4 to No. 6, with extra stay braces (to support and strengthen frames where the barrows are to be used in mines, quarries or for other purposes requiring extra strength), for an additional cost of 75 cents per barrow.

FOUNDRY BARROWS.

Size 4 a, each	$14 00
" 5 "	15 00
" 6 a, "	16 50

These barrows are made with trays of No. 12 iron, heavy legs and wheels, and especially adapted for wheeling castings, hot cinders, and general foundry and furnace use. The capacity of trays same as Nos. 4, 5, and 6.

WOODEN FRAME BARROWS.

TRAYS, BRACES, AND WHEELS OF IRON.

Canal Barrow, each	$10 00
Coal " "	18 50

Capacity, 280 lbs. Coal.

COAL BARROW—IRON TRAY.

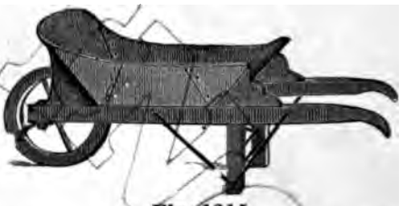


Fig. 1215.

Each . . . $17 50

STORE TRUCKS.

Fig. 1216.

Fig. 1217.

No.	1	2	3	4	5	6
Diameter Wheel, in.	7	8	9	10	12	14
Plain, each	$4 25	5 00	5 50	7 00	8 50	10 50
Strapped	6 25	7 00	7 50	9 00	10 50	12 50

Cotton Trucks same price as Store Trucks. Barrel Trucks with Bent Iron Slats, $1 00 advance.

BLOCK TRUCK.

Fig. 1218.

Each . . . $6 00

WWW.OLDESTHINT.COM

PATENT IRON, COAL, AND ORE TUBS.

Fig. 1220.

These Tubs are of two kinds, namely, Light, for horse power use, and heavy, for steam power. The scoop form, and the manner of construction of these Tubs, are universally approved. They can be more quickly filled and more easily dumped than any other form of tub.

COAL TUBS. LIGHT OR HORSE POWER TUBS.

Capacity, ton	⅛	⅙	⅕	¼
Per pair	$70 00	75 00	80 00	100 00

HEAVY OR STEAM POWER TUBS.

Capacity, lbs.	400	500	600	700	800	1000
Each	$55 00	73 00	90 00	100 00	110 00	130 00

Figs. 1221. 1222. 1223. 1224. 1225. 1226. 1227.

HOISTING AND CONVEYING MACHINE.

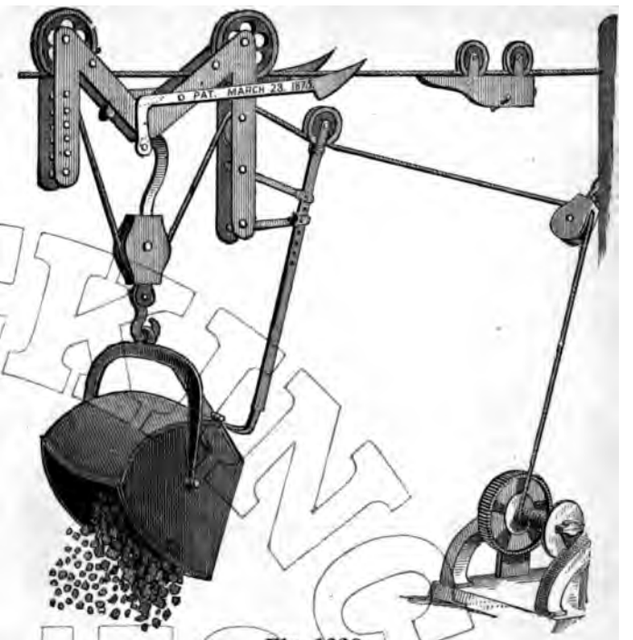


Fig. 1228.

The above cut represents the Hoisting and Conveying Machine suspended on wire cables, attached to posts set firmly in the ground. The hoisting rope is fixed to the arm of the machine on the left side, passes through the hoisting block, over the fixed sheave in the arm of the machine on the right side, thence under the sheave of the trip lever to a fixed swivel pulley block on the post, thence to the drum attached to a ten horse engine. The dumping tub shown suspended to the hoisting blocks can be removed, and any thing else desired used in its place.

This machine will perform the following work: It will hoist one gross ton fifty feet, convey it a distance of 300 to 500 feet, dump it, and return for another load in from one and a half to two and a half minutes, or three hundred tons in ten hours, at a cost not to exceed five cents per ton.

Each..... $1000 00

WROUGHT IRON TACKLE BLOCKS.

(Figs. 1221 to 1227.)

Diameter of Sheave, inch	2½	3½	4	4¾	5	6	6½	7	8	9	10	11
" Rope, "	½	⅝	¾	⅞	1	1⅛	1¼	1½	1¾	2	2¼	2½
With 1 Sheave	$1 80	2 00	2 65	3 40	4 60	5 30	5 30	6 50	9 00	14 30	24 50	33 50
" 2 "	2 50	3 20	3 90	5 00	7 00	7 75	7 75	11 50	17 00	23 50	45 50	57 75
" 3 "	3 20	3 90	4 80	6 40	9 00	9 85	9 85	14 75	22 00	33 40	59 00	74 00
" 4 "	3 90	4 60	5 70	8 50	11 70	13 00	13 00	21 50	30 00	43 50	73 00	89 50
Chain Sheaves, will chain diameter, inch				3-16	¼	5-16	5-16	⅜	7-16	9-16	⅝	¾
Brass Sheave Blocks, extra per Sheave	10	35	55	80	90	1 10	1 60	2 20	3 30	6 25	9 00	14 00
Patent Bushings												
Extra per Sheave, Brass	60	85	1 30	2 10	2 50	3 50	3 50					
" " Iron	40	45	50	65	75	90	90					

GIN BLOCKS.

Diameter of Wheel, inch	10	12	14	16	18	For Wire Rope. 18	30
" Rope, "	1	1	1¼	1½	1½	½ × ⅝	¾
Each	$5 00	6 00	7 00	8 00	10 00	14 50	17 00

GALVANIZED IRON PATENT TACKLE BLOCKS.

No.	5	7	9	11	13	15	17	19	21	23	25
Corresponds with Wooden Block, inch	2½	3	4	4½	5	6	7	8	9	12	14
Sheaves, Diameter, inch	1¾	2	2¾	2¾	3	3⅜	4¾	5	6	8	9
" Score, "	⅜	½	⅝	⅝	⅞	1	1⅛	1⅛	1¼	1¾	1½
For Rope, Diameter, inch	¼	¾	½	⅝	⅝	¾	⅞	⅞	1	1⅛	1¼
Common Iron, Sheaves Galvanized, Single	$0 30	45	85	95	1 10	1 30	1 65	1 80	2 50	3 25	4 00
" " " " Double	50	70	1 25	1 50	1 75	2 40	2 75	3 25	3 50	5 25	6 50
Galvanized " " Patent Steel Roller Bushings, Single	Not made.	94	1 28	1 50	1 75	2 00	2 25	2 75	3 50	4 50	5 50
" " " " " " " Double	"	1 58	2 35	2 65	3 00	3 50	4 60	4 75	5 50	7 50	9 50

BUYCHEAP SUPPLY CO. 50 & 52 JOHN ST. NEW YORK

BLOCKS ROPE STRAPPED.

WITH LOOSE HOOKS. LIGNUM-VITÆ SHEAVES.

Fig. 1229.

Dimensions.			Iron Bushed.			Roller Bushed.		
Sheave. Inch.	For Rope. Inch.	Shell. Inch.	Single. Each.	Double. Each.	Triple. Each.	Single. Each.	Double. Each.	Triple. Each.
2¼ × 13/16	½	4	$0 85	$1 50	$2 00	$1 30	$2 50	$3 50
3 × 13/16	⅝	5	1 00	1 70	2 30	1 50	2 75	4 25
3½ × 13/16	¾	6	1 21	2 10	2 70	2 00	3 70	5 00
4⅜ × 1 1/16	⅞	7	1 42	2 45	3 10	2 35	4 35	5 85
5 × 1 3/16	1	8	1 95	3 25	4 15	3 00	5 60	7 75
5¾ × 1 3/16	1	9	2 20	3 90	5 10	3 40	6 40	8 70
6¼ × 1 5/16	1⅛	10	2 40	4 65	6 00	3 90	7 30	9 80
7⅜ × 1 5/16	1⅛	11	2 80	5 45	7 00	4 50	8 30	11 50
8 × 1⅜	1¼	12	3 25	6 15	8 00	4 90	9 25	13 00

INSIDE IRON STRAPPED BLOCKS.

Fig. 1230.—Double. **Fig. 1231.**—Single, with Becket. **Fig. 1232.**

Common Loose Hooks. With Stiff Hooks with Mortise.

Fig. 1233.
With Stiff Swivel Hooks and Beckets.

Fig. 1234.
With Eyes for Shackles or Lashing.

Fig. 1235.
With Stiff Swivel Hooks.

Dimensions.			Common Iron Bushed.			Patent Roller Bushed.		
Sheave. Inch.	For Rope. Inch.	Shell. Inch.	Single. Each.	Double. Each.	Triple. Each.	Single. Each.	Double. Each.	Triple. Each.
2¼ × 13/16	½	4	$1 00	$2 00	$3 00	$1 50	$2 90	$4 00
3 × 13/16	⅝	5	1 35	2 50	3 50	2 00	3 80	5 50
3½ × 13/16	¾	6	1 70	3 00	4 15	2 50	4 55	6 55
4⅜ × 1 1/16	⅞	7	2 00	3 60	4 80	2 95	5 45	7 65
5 × 1 3/16	1	8	2 30	4 15	5 50	3 35	6 25	8 55
5¾ × 1 3/16	1	9	2 55	4 65	6 20	3 80	7 00	9 85
6¼ × 1 5/16	1⅛	10	2 85	5 15	6 90	4 20	7 80	10 95
7⅜ × 1 5/16	1⅛	11	3 40	6 25	8 45	4 90	8 60	12 50
8 × 1⅜	1¼	12	3 75	6 80	9 25	5 35	10 00	13 75
8⅝ × 1⅜	1¼	13	4 35	7 30	10 75	6 15	11 50	16 00
9 × 1½	1⅜	14	5 00	9 00	12 50	6 75	12 50	17 50
10 × 1⅝	1½	15	5 75	10 50	15 00	7 25	13 50	19 50

Blocks with Match Hooks 2½ cents net per inch each Mortise more than same size with Common Hook as above.

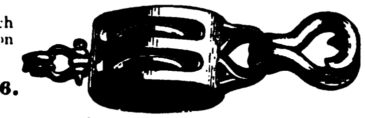


Fig. 1236.

With Match or 'Sister' Hooks and Beckets.

Fig. 1238.

Fig. 1237.—With Loose Swivel Hooks.

Blocks with Loose Swivel Hooks cost 3½ cents net per inch each Mortise more than same size with Common Hooks.

DOCK BLOCKS.

Patent Bushed.

(Fig. 1234.)

Size of Sheave, inch.	6 × 1⅞	7 × 2	8 × 2⅛	9 × 2⅜	10 × 2⅞
Length of Shell, "	10	12	14	16	20
Each	$9 40	10 75	11 75	16 00	22 00

The above with patent *steel* roller bushed sheaves without extra charge.

Fig. 1239.

BLOCKS FOR ROPE STRAPS.

Lignum-vitæ Sheaves.

(Fig. 1239.)

Common, 3, 4, 5, 6 inch, inclusive, each Mortise, per inch.. $0 07
Patent... 3, 4, 5, 6 " " " " " .. 18
Common, 7, 8, 9, 10 " " " " " .. 1
Patent... 7, 8, 9, 10 " " " " " .. 20
Common, 11, 12, 13, 14 " " " " " .. 10
Patent... 11, 12, 13, 14 " " " " " .. 23

LIGNUM-VITÆ SHEAVES FOR BLOCKS.

Length of Block, inch	4	5	6	7	8	9
Size of Sheave, "	2¼ × 13/16	3 × 13/16	3½ × 13/16	4⅜ × 1 1/16	5 × 1 3/16	5¾ × 1 3/16
Size of Pin Hole, "	⅜	⅜	⅜	½	½	⅝
Common Iron Bushed	$0 20	25	30	35	45	55
Patent Roller Bushed		65	80	95	1 10	1 25

Length of Block, inch	10	11	12	13	14
Size of Sheave, "	6¼ × 1 5/16	7⅜ × 1 5/16	8 × 1⅜	8⅝ × 1⅜	9 × 1½
Size of Pin Hole "	⅝	¾	¾	¾	¾
Common Iron Bushed	$0 65	80	95	1 15	1 30
Patent Roller Bushed	1 50	1 75	2 10	2 45	2 75

THICK MORTISE BLOCKS.

Extra Heavy Inside Iron Straps. Extra Thick Middles, and Cheek Edge Bolted.

Fig. 1240.

Diameter, for Rope, inch	1⅛	1¼	1⅜	1⅜	1½	1½	1⅝	1¾
" Shell "	8	9	10	11	12	13	14	15
Common Iron Bushed, Single, each	$3 25	3 60	4 00	4 70	5 30	6 00	6 70	7 70
" " " Double, "	6 00	6 75	7 50	8 80	9 90	11 00	12 25	14 00
" " " Triple, "	8 40	9 35	10 50	12 00	13 75	15 50	17 50	20 50
Patent Roller Bushed, Single "	4 25	4 85	5 50	6 35	7 00	7 85	8 60	9 50
" " " Double, "	8 10	9 10	10 40	11 50	13 00	15 00	16 50	18 00
" " " Triple, "	11 35	13 00	15 00	17 00	19 00	21 00	23 25	26 50

HEAVY PURCHASE BLOCKS WITH RINGS.

Iron Bushed Sheaves.

Fig. 1241.

Diameter of Rope, inch	1¾	2	2¼	2½
Length of Shell, "	16	18	20	22
Single, each	$11 00	18 00	23 00	30 00
Double, "	20 50	32 00	40 00	50 00
Triple, "	28 50	42 00	53 00	65 00

Heavy Purchase Blocks with solid or open Iron Sheaves, Patent Steel Roller Bushed, furnished to order.

SNATCH BLOCKS.

With Swivel Hook.

Fig. 1242.

Wood Sides. Edge Bolted.

Size, inch	6	7	8	9	10	12	14	16	18	20
Rope, "	⅞	1	1	1⅛	1¼	1½	1¾	2	2¼	2½
Each	$4 80	5 65	6 45	7 90	8 80	10 50	13 20	15 10	20 75	24 50

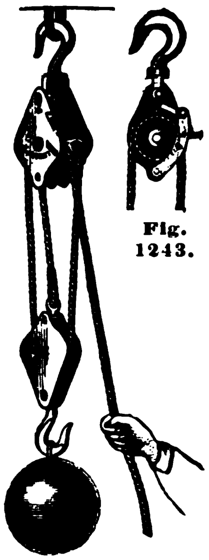


Fig. 1243.

Fig. 1244.

SELF-SUSTAINING ROPE PULLEY BLOCKS.

It is self-sustaining, the eccentric brake being put in action by moving the hand rope to the right or left, or by pulling the rope outward, causing it to touch the guide A (shown in the smallest cut), which acts as a friction clutch, holding the weight firmly at any desired point. To lower, pull down the hand rope an inch or two ; this will release the brake ; then allow the rope to run freely through the hand.|

Diam. of Sheave, inch,	2½	3½	4	4¾	5	6
" Rope, "	⅜	½	⅝	¾	⅞	1
1 pair 1 & 1 Sheave...	$6 00	6 40	7 35	9 00	11 40	12 90
1 " 1 & 2 "	6 55	7 35	8 40	10 45	13 50	15 10
1 " 2 & 2 " ...	7 15	8 30	9 45	11 90	15 70	17 20
1 " 2 & 3 "	7 75	8 90	10 25	12 90	17 20	18 90
1 " 3 & 3 "	8 30	9 45	11 00	14 10	18 75	20 70
1 " 3 & 4 "	8 90	10 00	11 80	15 85	21 00	23 40
1 " 4 & 4 "	9 45	10 60	12 55	17 60	23 35	26 00
Each Sheave will lift with safety, about, cwt.	1	3	5	7	10	11

DIFFERENTIAL PULLEY BLOCKS.

Fig. 1245.—With Sprocket Wheel.

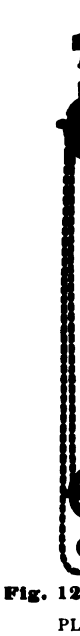


Fig. 1246.—Plain.

Fig. 1247.—Geared.

PLAIN.

Style.		Chain.		Sheaves.		Yokes and Hooks.		Pins.	
Ton.	Complete.	Regular L'gth, ft.	Extra per foot.	Top.	Bottom.	Top.	Bottom.	Top.	Bottom.
¼	$22 50	26	$0 40						
½	25 00	26	40	$2 50	$1 50	$4 00	$3 25	$0 80	$0 65
1	30 00	30	44	3 00	1 25	4 75	3 75	1 00	0 80
1½	40 00	34	48	4 50	1 75	6 00	4 75	1 20	1 00
2	50 00	38	52	6 50	2 50	8 00	6 00	1 50	1 25
3	70 00	38	60						

	WITH SPROCKET WHEEL.	Chain.		GEARED.	Main Chain.		Hand Chain.	
Ton.	Each.	Regular L'gth, ft.	Extra, per foot.	Each.	Regular L'gth, ft.	Extra per foot.	Regular L'gth, ft.	Extra per foot.
1				$50 00	30	$0 45	20	$0 40
2	$75 00	30	$0 50	80 00	30	55	20	40
3	100 00	30	50	120 00	30	60	20	40
4	140 00	30	50	170 00	30	70	20	40
5	200 00	50	60	225 00	30	90	20	40
6	300 00	50	70	300 00	35	1 00	25	40
8	400 00	50	75					
10	500 00	50	80					

In ordering Chains, allow four feet of chain for each foot of hoist, except for Sprocket Pulleys, which require only three feet.

Fig. 1248.

PICKERING'S PATENT PULLEY BLOCKS.

They sustain the load, and can not slip. The lifting chain is supplied with a hook at each end, no lowering being required for a fresh load. The working parts run on steel, and, being internal, are not liable to accident.

Having two chains, they work with less friction and with more speed than has been obtained with any other pulley block, enabling one man to lift from 15 to 20 cwt.

Can be worked at an angle, thereby enabling the workman to stand from under the load.

Lifting Power, ton.	Height of Lift, feet.	Complete.	Extra Chain, per foot lift.
½	8	$25 00	$1 00
1	8	30 00	1 50
1½	8	40 00	1 65
2	9	50 00	1 80
3	10	75 00	2 20
4	10	95 00	2 30

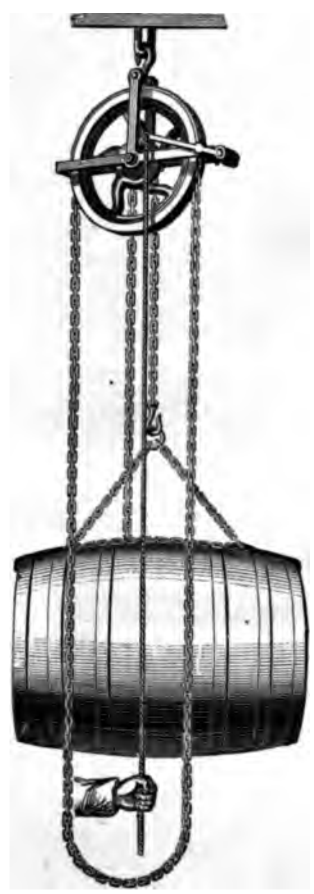


Fig. 1249.—Hoist, with Brake.

PICKERING'S PATENT SACK HOIST.

These Hoists are made so that a man may lift or lower any load, at a quick speed, any height of lift, according to length of chains. With a pull equal to 1 cwt. upon the endless chain, 5 cwt. can be raised on the smallest size Hoist.

While the load is being raised by one end of the lift chain, the other end is descending for a fresh load. They are made in three forms, with and without ratchet for sustaining the load, and with brake for quick and easy lowering. They are useful for builders, warehouses, mills, farmers, etc.

Hoist to lift 500 lbs., without Brake or Ratchet..	$16 00
Chain, including Hooks or Rings, per running foot,	23
Hoist to lift 1000 lbs., without Brake or Ratchet,	23 00
Chain, including Hooks or Rings, per running foot,	27
With Ratchet, extra, to each	5 00
" Brake, " "	10 00

In ordering Chains, the height of lift MUST be given. In many cases it will not be necessary to order the endless hand chain the same length as the lifting chain, as the hoist can be worked on the top floor when the lift chain can be loaded at the bottom ; but if not specified otherwise, the full length will be sent.

CHAINS.

SHORT LINK CHAINS.

Stud Chains one tenth cent to one eighth cent per lb. less.

All high grades and small Chains best English make. Most of the *large Cables* American best iron and make.

Size, inch	3/16	1/4	5/16	3/8	7/16	1/2	9/16	5/8	11/16	3/4	13/16	7/8	15/16	1	1 1/16	1 1/8	1 3/16	1 1/4
Best proof Chains, made from refined Iron	13½	10½	9¾	9½	8¾	7⅜	7¼	6⅝	6½	6⅜	6	5¾	5⅝	5½	5½	5½	5 3/10	5⅛
Extra quality Admiralty proof Chain, made from extra Iron,	14½	12	10¾	10½	9¾	8½	7½	6⅞	6¾	6½	6¼	6	5¾	5⅝	5⅝	5½	5½	5⅜
B B Crane Chain	18½	14⅛	14	13	12½	12	11½	11	10½	10¼	10¼	10		10		10	10	
Lord Ward's B B B Crown Chain,		17½	15¾	14¼	13¼	13	13	12¾	12¼	12¼	12¼	12		11¾		11¾		

Fig. 1250.—Straight Coil. **Fig. 1251.**—Twist Coil.

GERMAN COIL CHAIN, BRIGHT.

Size	00000	0000	000	00	0	1	2	3	4
Per 100 feet	$11 00	9 35	6 60	5 70	5 00	4 40	4 00	3 85	3 70

CONNECTING SHACKLES.

WROUGHT IRON, IMPROVED.

Size corresponds with size of chain.

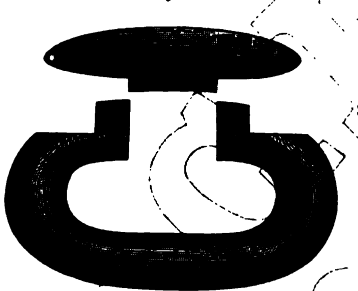


Fig. 1252.

Size of Wire, inch.	Per doz.	Size of Wire, inch.	Per doz.
1/4	$2 50	5/8	$3 50
5/16	2 63	11/16	3 75
3/8	2 75	3/4	4 00
7/16	2 88	7/8	5 00
1/2	3 00	1	6 00
9/16	3 25		

THOMPSON'S PATENT.

Fig. 1253.

Size of Iron, in.	Per doz.	Size of Iron, in.	Per doz.
1/4	$2 50	5/8	$3 62
5/16	2 60	11/16	4 00
3/8	2 75	3/4	4 25
7/16	2 87	7/8	6 00
1/2	3 10	1	7 25
9/16	3 38		

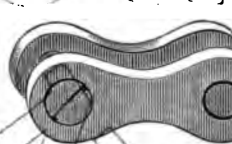


Fig. 1254.—Size corresponds with size of chain.

Size, inch	1/4	3/8	1/2	5/8	3/4	7/8	1
Per dozen	$1 75	1 87½	2 00	2 12½	2 25	2 37½	2 75

CHAIN LINKS.

Fig. 1255.

Fig. 1256.

Fig. 1257.

Fig. 1258.

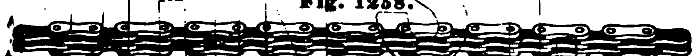


Fig. 1259.

Fig. 1260.

We make between one and two hundred different styles, varying in length from one quarter inch to twelve inches long. They are suitable for almost every variety of work, such as models for small machines, feed motion for lathes, mules, ice hoisting, sugar mills, etc. In fact, we can furnish them for every kind of work desired.

Outside length, inch	3/4	1	1 1/8	1 1/4	1 3/8	1 1/2	1 3/4	1 7/8
Per thousand	$7 50	9 40	11 20	12 50	13 60	15 00	22 50	30 00

All larger sizes 20 cents per pound.

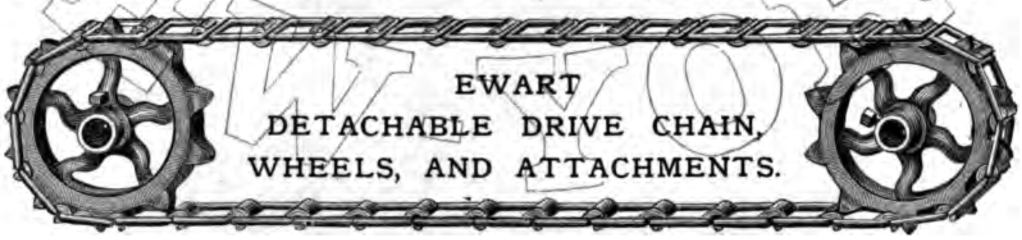


Fig. 1261.

CHAIN—Without Attachments.

No.	25	33	35	38	42	45	48	52	57	64	67	*673	75	84	103	*106	125
Per foot	$0 13	12	14	13	17	16	16	25	24	27	28	45	32	45	65	80	1 00

WHEELS.

Diameter, inch	4	6	8	10	12	14	16	18	20	24	28	30	36	40	48	60	72
For No. 45 Chain,	$2 00	2 35	2 75	3 00	3 25	3 75	4 10	4 45	5 25	6 00	8 50						
" 67 "		2 80	3 50	3 75	4 00	4 50	4 85	5 50	6 50	7 50	9 50	11 50	13 75	17 00	21 00	33 00	48 00

First figure of number indicates the gauge iron in sixteenths inch.
* 3-Bar Links.

Wheels bored and key seated or set screw, at above price.
If ordered in the rough, mention size of bore intended.

WIRE ROPE.

HOISTING ROPE, 19 WIRES TO THE STRAND.

IRON. Trade Number	1	2	3	4	5	6	7	8	9	10	10¼	10½	10¾
Circumference in inches	6¾	6	5½	5	4¾	4	3½	3⅛	2¾	2¼	2	1⅝	1½
Diameter, inches	2¼	2	1¾	1⅝	1½	1¼	1⅛	1	⅞	¾	⅝	9-16	½
Breaking Strain in Tons of 2000 lbs.	74	65	54	44	35	27	20	16	11½	8.64	5.13	4.27	3.48
Proper Working Load in Tons of 2000 lbs.	15	13	11	9	7	5½	4	3	2½	2	1½	¾	½
Circumference of Hemp Rope of Equal Strength	15½	14½	13	12	10¾	9½	8	7	6	5	4½	4	3¾
Minimum Size of Drum or Sheave in Feet	8	7	6½	5	4½	4	3½	3	2¾	2½	2	1¾	1½
Per foot	$1 32	1 10	95	76	61	48	40	34	27	20	19	17	15
STEEL. Breaking Strain in Tons of 2000 lbs.	107	97	78	64	52	39	30	24	20	13	7	5	
Circumference of Hemp Rope of Equal Strength			15¾	14½	13	12½	10	9¼	8¼	6½	5	4¼	
Proper Working Load in Tons of 2000 lbs.	22	20	18	13	11	9	6	5	4	3	2	1¼	
Minimum Size of Drum or Sheave in Feet	9	8	7½	6	5½	5	4½	4	3¾	3½	3	2¾	
Per foot	$1 75	1 35	1 25	1 00	75	62	53	43	36	27	22	19	

Tiller Rope, ⅝ inch. diameter, per foot........$0 28 Tiller Rope, ½ inch. diameter, per foot........$0 23

IRON. Trade Number	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Circumference in inches	4⅝	4¼	3¾	3⅜	3	2⅝	2⅜	2⅛	1⅞	1⅝	1⅜	1¼	1⅛	1	⅞
Diameter "	1½	1⅜	1¼	1⅛	1	⅞	¾	11-16	⅝	½	7-16	⅜	5-16	9-32	¼
Circumference of Hemp Rope of Equal Strength	10¾	10	9½	8¾	7½	6¼	5½	5	4¾	4	3¼	2¾	2½	2¼	2
Ultimate Strength in Tons of 2000 lbs.	36	30	25	20	16	12.3	8.8	7.6	5.8	4.1	2.83	2.13	1.65	1.38	1.03
Proper Load in Tons of 2000 lbs.	9	7½	6¼	5	4	3	2½	2	1½	1	¾	½			
Per foot	$0 56	48	40	32	27	20	18	15	12	9	8	7	6½	6	5
STEEL. Circumference of Hemp Rope of Equal Strength	13	12	10¾	9	8	7½	6½	5¾	5	4¾					
Ultimate Strength in Tons of 2000 lbs.	50	43	36	29	23	18	13	11	8½	6					
Proper Load in Tons of 2000 lbs.	12½	10	9	7	6	5	3¼	2¾	2¼	1½					
Per foot	$0 74	63	52	42	34	27	21	18	15	12					

Note.—Where large Winding Drums and Sheaves are used, the Ropes noted in the above tables are suitable for Hoisting purposes, from No. 16 down. Where thus used, they should always be made with a Hemp centre.

WIRE ROPE FASTENINGS.

CLOSED SOCKETS.

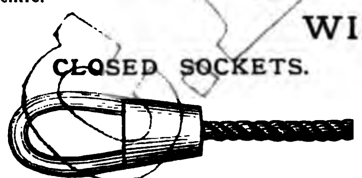


Fig. 1262.

For 2¼ inch. diameter Rope, each, Loose	$11 00	Fastened,	$12 50
" 2 " " " " "	10 00	"	11 50
" 1¾ " " " " "	8 50	"	10 00
" 1⅝ " " " " "	6 50	"	7 75
" 1½ " " " " "	4 50	"	5 50
" 1¼ " " " " "	3 75	"	4 75
" 1⅛ " " " " "	3 25	"	4 00
" 1 " " " " "	2 75	"	3 25
" ⅞ " " " " "	2 50	"	3 00
" ¾ " " " " "	2 25	"	2 75
" ⅝ " " " " "	1 75	"	2 25
" ½ " " " " "	1 75	"	2 25
" ⅜ " " " " "	1 50	"	2 00

ROUND THIMBLES SPLICED IN.

Fig. 1265.

For 1¼ inch. diameter Rope, each	$2 75
" 1⅛ " " " " "	2 50
" 1 " " " " "	2 25
" ⅞ " " " " "	2 00
" ¾ " " " " "	1 75
" ⅝ " " " " "	1 50
" ½ " " " " "	1 25
" ⅜ " " " " "	1 00

Oval same price as Round.

OPEN SOCKETS.

Fig. 1263.

For 2¼ inch. diameter Rope, each, Loose	$13 00	Fastened,	$14 50
" 2 " " " " "	11 00	"	12 50
" 1¾ " " " " "	9 00	"	10 50
" 1⅝ " " " " "	7 25	"	8 50
" 1½ " " " " "	5 50	"	6 50
" 1¼ " " " " "	4 75	"	5 50
" 1⅛ " " " " "	4 00	"	4 75
" 1 " " " " "	3 25	"	3 75
" ⅞ " " " " "	3 00	"	3 50
" ¾ " " " " "	2 75	"	3 25
" ⅝ " " " " "	2 25	"	2 75
" ½ " " " " "	2 25	"	2 75
" ⅜ " " " " "	2 00	"	2 50

Sockets with Chain—price according to size and quantity of Chain.

HOOK AND SOCKET.

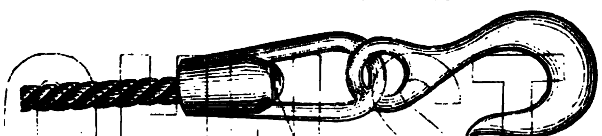


Fig. 1266.

For 2¼ inch. diameter Rope, each, Loose	$14 00	Fastened,	$15 50
" 2 " " " " "	12 00	"	13 50
" 1¾ " " " " "	10 00	"	11 50
" 1⅝ " " " " "	8 00	"	9 25
" 1½ " " " " "	6 00	"	7 00
" 1¼ " " " " "	5 00	"	6 00
" 1⅛ " " " " "	4 50	"	5 25
" 1 " " " " "	3 75	"	4 25
" ⅞ " " " " "	3 50	"	4 00
" ¾ " " " " "	3 25	"	3 75
" ⅝ " " " " "	2 50	"	3 00
" ½ " " " " "	2 50	"	3 00
" ⅜ " " " " "	2 25	"	2 75

SWIVEL HOOKS.

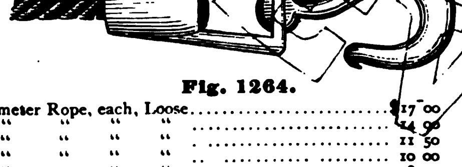


Fig. 1264.

For 2¼ inch. diameter Rope, each, Loose	$17 00	Fastened,	$18 50
" 2 " " " " "	14 00	"	15 50
" 1¾ " " " " "	11 50	"	13 00
" 1⅝ " " " " "	10 00	"	11 25
" 1½ " " " " "	8 50	"	9 50
" 1¼ " " " " "	7 50	"	8 25
" 1⅛ " " " " "	6 50	"	7 25
" 1 " " " " "	5 50	"	6 25
" ⅞ " " " " "	4 50	"	5 00
" ¾ " " " " "	4 00	"	4 50
" ⅝ " " " " "	3 50	"	4 00
" ½ " " " " "	3 25	"	3 75
" ⅜ " " " " "	3 25	"	3 75

HOOK AND THIMBLE.

Fig. 1267.

For 1¼ inch. diameter Rope, each, Loose	$2 00	Fastened,	$4 25
" 1⅛ " " " " "	1 75	"	3 50
" 1 " " " " "	1 50	"	3 25
" ⅞ " " " " "	1 25	"	3 00
" ¾ " " " " "	1 25	"	3 00
" ⅝ " " " " "	1 00	"	2 50
" ½ " " " " "	1 00	"	2 25
" ⅜ " " " " "	1 00	"	2 25

SISTER HOOKS.

For 1¼ inch. diameter Rope, each, Loose	$3 00	Fastened,	$5 25
" 1⅛ " " " " "	2 50	"	5 00
" 1 " " " " "	2 25	"	4 00
" ⅞ " " " " "	2 00	"	3 50
" ¾ " " " " "	1 80	"	3 25
" ⅝ " " " " "	1 50	"	2 50
" ½ " " " " "	1 50	"	2 50
" ⅜ " " " " "	1 50	"	2 50

WHEELS FOR TRANSMISSION OF POWER BY WIRE ROPE.

Wheels Bored to Fit Shaft and Lined with Patent Rubber.

1½ feet diameter, each	$6 00	7 feet diameter, each	$95 00
2 " " "	8 00	8 " " "	125 00
3 " " "	25 00	9 " " " in halves	225 00
4 " " "	33 00	10 " " " "	300 00
5 " " "	53 00	11 " " " "	350 00
6 " " "	75 00	12 " " " "	400 00

Special prices for Larger Wheels.

THIMBLE AND CLAMPS.

Prices according to size.

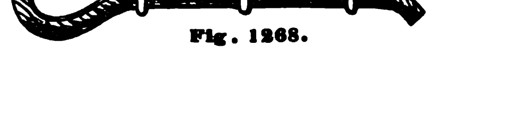


Fig. 1268.

WIRE.

STUB'S BRIGHT STEEL WIRE.

No.	½ to 15,	per lb.	$1 25
"	16 to 30,	"	1 35
"	31 to 38,	"	1 50
"	39 to 46,	"	1 65
"	47 to 50,	"	1 85
"	51 to 54,	"	2 38
"	55 to 57,	"	2 85
"	58 to 60,	"	3 35
"	61 to 62,	"	3 85
"	63 to 65,	"	4 35
"	66 to 68,	"	4 80
"	69 to 70,	"	5 40

IRON WIRE.

Nos.	0 to 6,	per lb.	$0 09
"	7 to 9,	"	10
"	10 to 11,	"	11
"	12,	"	11½
"	13 to 14,	"	12½
"	15 to 16,	"	14
"	17,	"	15
"	18,	"	16
"	19,	"	19
"	20,	"	20
"	21,	"	21
"	22,	"	22
"	23,	"	23
"	24,	"	24
"	25,	"	25
"	26,	"	26
"	27,	"	28
"	28,	"	29
"	29,	"	30
"	30,	"	32
"	31,	"	33
"	32,	"	35
"	33,	"	37
"	34,	"	40
"	35,	"	45
"	36,	"	55

STEEL WIRE.

Nos.	1 to 6,	per lb.	$0 23
"	7 to 9,	"	24
"	10 to 11,	"	25
"	12,	"	26
"	13,	"	28
"	14,	"	30
"	15,	"	32
"	16,	"	33
"	17,	"	34
"	18,	"	36
"	19,	"	38
"	20,	"	40
"	21,	"	50
"	22,	"	60

TINNED WIRE.

Nos.	0 to 9,	per lb.	$0 15
"	10 to 11,	"	16
"	12 to 14,	"	17
"	15 to 16,	"	17½
"	17,	"	18
"	18 to 20,	"	20
"	21 to 22,	"	21
"	23 to 24,	"	22

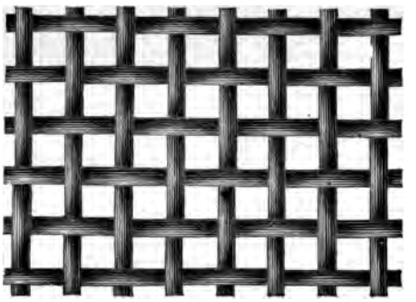


Fig. 1269.—No. 3½ Mesh, No. 13 Wire.

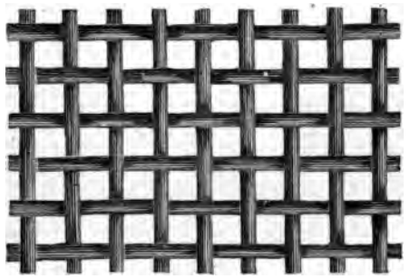


Fig. 1270.—No. 4 Mesh, No. 14 Wire.

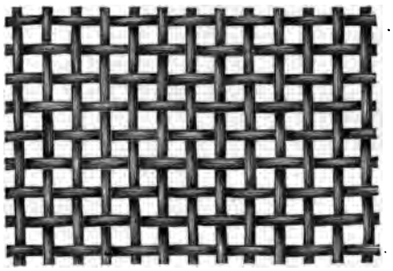


Fig. 1271.—No. 6 Mesh, No. 16 Wire.

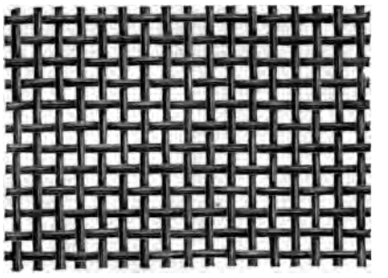


Fig. 1272.—No. 8 Mesh, No. 18 Wire.

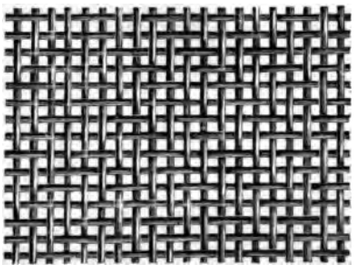


Fig. 1273.—No. 10 Mesh, No. 19 Wire.

GALVANIZED WIRE.

Nos.	0 to 6,	per lb.	$0 16
"	7 to 9,	"	17
"	10 to 11,	"	18
"	12,	"	20
"	13,	"	22
"	14,	"	24
"	15,	"	26
"	16,	"	28
"	17,	"	30
"	18,	"	32
"	19,	"	34
"	20,	"	36

BRASS AND COPPER WIRE.

Nos.	High Brass.	Low Brass.	Gilding and Copper.
0 to 20,	$0 34	$0 38	$0 45
21	35	39	46
22	36	40	47
23	37	41	48
24	39	43	50
25	42	46	53
26	44	48	55
27	46	50	57
28	49	53	60
29	52	56	63
30	55	59	69
31	59	63	75
32	63	67	81
33	67	71	90
34	71	75	1 00

Spring Wire 2 cents per lb. advance.

Wire straightened and cut, smaller than No. 8, and not less than 2 feet lengths, 45 cents.

Wire and Rods less than 2 feet lengths, special rates.

12 cents per lb. extra for spooling on one pound spools.

HEAVY CRIMPED SPARK CLOTH.

FOR LOCOMOTIVES.

(Figs. 1269 to 1273.)

No. 3 Mesh, of No. 12 Iron Wire (Stub's Gauge), per square foot							$0 55
No. 3 Mesh, of No. 13 Iron Wire, per square foot							48
" 3	"	"	14	"	"	"	40
" 3½	"	"	12	"	"	"	70
" 3½	"	"	13	"	"	"	55
" 3½	"	"	13½	"	"	"	50
" 3½	"	"	14	"	"	"	48
" 3½	"	"	15	"	"	"	40
" 4	"	"	13	"	"	"	65
" 4	"	"	14	"	"	"	55
" 4	"	"	15	"	"	"	45
" 2 × 5	"	"	14	"	"	"	55
" 5	"	"	14	"	"	"	70
" 5	"	"	15	"	"	"	60
" 5	"	"	16	"	"	"	50
" 6	"	"	15	"	"	"	75
" 6	"	"	16	"	"	"	60
" 6	"	"	17	"	"	"	50
" 8	"	"	17	"	"	"	75
" 8	"	"	18	"	"	"	60
" 8	"	"	19	"	"	"	45
" 10	"	"	19	"	"	"	80
" 10	"	"	20	"	"	"	62
" 10	"	"	21	"	"	"	50
" 12	"	"	20	"	"	"	75
" 12	"	"	21	"	"	"	60
" 12	"	"	22	"	"	"	50

For Steel Cloth as above, add 10 per cent to net price iron.

ROLL WIRE STRAIGHTENER.

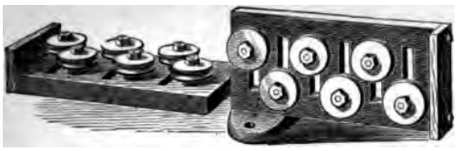


Fig. 1274.—No. 1.

Several sizes of the above, varying from 10 to 21 inches long, with Rolls from 1 to 2 inches diameter. Parties desiring Straighteners of this kind should state the numbers of wire they desire to straighten, and the size and price of the style best adapted for the purpose will be furnished.

Average price about.....$25 00

ROLL WIRE STRAIGHTENER.

SPECIAL STYLE.

Fig. 1275.

Designed for small wire. Is 8½ inches long and 4½ inches wide, and weighs 7 lbs. Is capable of very fine adjustment, the Dies being held at each end by Thumb Screws. These Straighteners are so constructed that any number of them may be attached together, if desired.

Each.....$25 00

THE ROLL STRAIGHTENERS illustrated above are designed and constructed for use on Automatic Wire-Working Machinery, and also for parties who either do not have power or prefer this kind. They can be held in a vise or fastened to a post or bench, and the wire straightened by being pulled through with a small hand vise or pair of pliers.

ROTARY WIRE STRAIGHTENER.

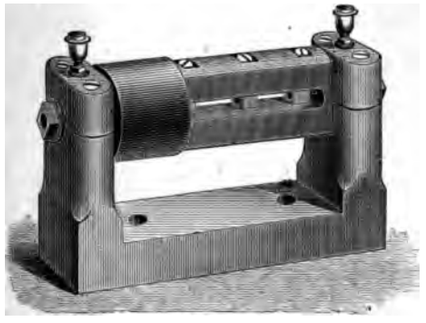


Fig. 1276.—No. 1.

Has 3 Adjustable Dies. Is 13 inches long, 9 inches high, and weighs 40 lbs.

Each.....$25 00

ROTARY WIRE STRAIGHTENER.

No. 2.

Same style as No. 1, has 4 Adjustable Dies. Is 16 inches long, 9 inches high, and weighs 43 lbs.

Each.....$30 00

An Adjusting Wrench, and different sizes of Dies and Bushings are furnished with each machine, without extra charge.

COMBINED WIRE STRAIGHTENING AND CUTTING MACHINE.

Fig. 1277.—No. 1.

The Geared Rolls and Rotary Straightener on this machine are run from the same countershaft. This countershaft should be so constructed as to run the Rotary Straightener 2000 revolutions per minute. A small pulley is needed on the countershaft (by the side of the pulley which drives the straightener) to run the Geared Rolls by a half twist of the belt. The pulley to drive the Straightener should be six times as large as the pulley which drives the Rolls. The machine stands 4 feet high over all, and weighs 300 lbs.

Each.....$100 00
Overhead Work, per lb., extra..... 15

WIRE REELS.

Fig. 1278.

No. 1 stands 3 feet 6 inches high, weighs 15 lbs. The fingers on the arms can be spread to hold coils of wire whose inside dimensions do not exceed 2 feet.

Each.....$3 00

No. 2, same height as No. 1, weighs 35 lbs. Will hold any ordinary coil of wire.

Each.....$5 00

Special Wire-Working Tools of all descriptions made to order at short notice.

COMBINED WIRE STRAIGHTENING AND CUTTING MACHINE.

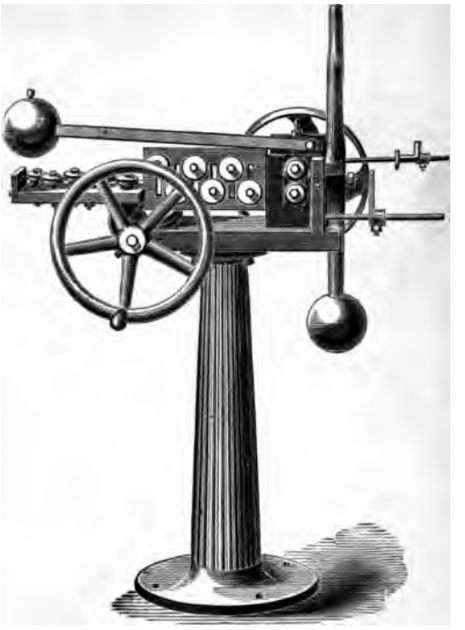


Fig. 1279.—No. 2.

This machine has been constructed to meet the wants of those who do not have power. It can be used with or without power, as desired. Is similar in construction and measurements to the No. 1 Machine, with the exception of the Straightener.

Each.....$100 00

In ordering Machines state the numbers of wire desired to be cut and straightened.

ROTARY WIRE STRAIGHTENER.

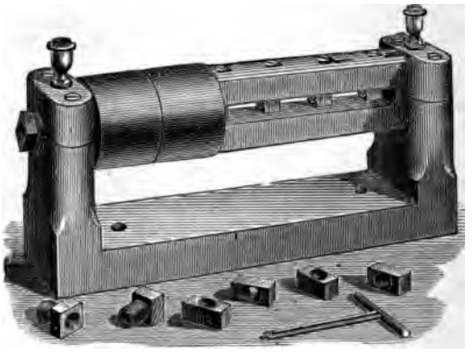


Fig. 1280.—No. 5.

Has 3 adjustable Dies and Loose Pulley. Is 18 inches long by 9 inches high, and weighs 50 lbs.

Each.....$32 00

ROTARY WIRE STRAIGHTENER.

No. 4.

Same Style as No. 1, but has in addition a Loose Pulley, as shown in No. 3, is 16 inches long, 9 inches high, weighs 43 lbs.

Each.....$27 00

An Adjusting Wrench, and different sizes of Dies and Bushings are furnished with each machine, without extra charge.

I can furnish *Special Sizes of Straighteners* to straighten any size of wire larger than No. 1 Stubb's Gauge, if desired.

FOR NIPPERS and PLIERS see MACHINISTS' TOOLS.

COMPOUNDS.

Albany Lubricating, per lb. $0 40
Oleine " " 35
Houghton Boiler Compound, per gall 1 50
Downer's " " " 1 50
Noyes' Patent Liquid Cooling Compound, per gall ....
Bidge's Patent Lubricant, per lb. ....
Dennison Cooling. " ....
Soluble Glass for Protecting Wood from Sparks, per gal ....
Cherry Heat Welding Compound ....

ROUND RUBBER BELTING.

¼ inch, per foot	$0 14	¾ inch, per foot	$0 38
⅜ " "	17	⅞ " "	48
½ " "	20	1 " "	59
⅝ " "	27		

ROUND RAWHIDE BELTING.

¼ inch, per foot	$0 05	¾ inch, per foot	$0 22
⅜ " "	10	⅞ " "	26
½ " "	15	1 " "	30
⅝ " "	18		

OAK-TANNED LEATHER BELTING.

Single Bands, 1 inch	$0 09	Single Bands, 23 inch	$3 06
" " 1½ "	15	" " 24 "	3 22
" " 2 "	21	" " 26 "	3 56
" " 2½ "	27	" " 28 "	3 90
" " 3 "	33	" " 30 "	4 22
" " 3½ "	39	" " 32 "	4 54
" " 4 "	45	" " 34 "	4 86
" " 4½ "	51	" " 36 "	5 18
" " 5 "	57	" " 38 "	5 50
" " 5½ "	63	" " 40 "	5 82
" " 6 "	69	" " 44 "	6 46
" " 7 "	81	" " 48 "	7 10
" " 8 "	93	Round Bands, Solid, ⅛ inch,	05
" " 9 "	1 05	" " " 3/16 "	07
" " 10 "	1 17	" " " ¼ "	10
" " 11 "	1 29	" " " 5/16 "	14
" " 12 "	1 41	" " " ⅜ "	18
" " 13 "	1 53	" " Twisted, ⅛ "	05
" " 14 "	1 65	" " " 3/16 "	09
" " 15 "	1 80	" " " ¼ "	12
" " 16 "	1 94	" " " 5/16 "	16
" " 17 "	2 10	" " " ⅜ "	20
" " 18 "	2 26	" " " ½ "	25
" " 19 "	2 42	" " " ⅝ "	30
" " 20 "	2 58	" " " ¾ "	38
" " 21 "	2 74	" " " ⅞ "	45
" " 22 "	2 90	" " " 1 "	53

Twist Belting larger than ½ inch is made with a *Core*.

The above prices adopted by Belt Manufacturers' Association, December 14, 1876.

RUBBER BELTING.

2 Ply, 1 inch	$0 07	3 Ply, 18 inch	$1 70
" 1¼ "	8½	" 20 "	1 90
" 1½ "	10	" 22 "	2 12
" 2 "	14	" 24 "	2 36
" 2½ "	17	4 Ply, 2 "	21
" 3 "	20	" 3 "	31
" 3½ "	24	" 4 "	42
" 4 "	28	" 5 "	52
3 Ply, 2 "	17	" 6 "	62
" 3 "	26	" 7 "	73
" 4 "	34	" 8 "	84
" 5 "	43	" 9 "	95
" 6 "	52	" 10 "	1 07
" 7 "	60	" 11 "	1 18
" 8 "	70	" 12 "	1 30
" 9 "	80	" 13 "	1 42
" 10 "	90	" 14 "	1 54
" 11 "	1 00	" 15 "	1 66
" 12 "	1 08	" 16 "	1 78
" 13 "	1 18	" 18 "	2 02
" 14 "	1 28	" 20 "	2 26
" 15 "	1 38	" 22 "	2 52
" 16 "	1 50	" 24 "	2 80

For purposes where unusual strength is required—equivalent to double leather—we make 5 or 6 Ply Belts to order, at one week's notice, at an advance on 4 Ply prices of 25 per cent for each additional ply.

ENDLESS RUBBER BELTS,

Of any width or length, made to order, at ten days' notice, at current list prices, with an additional charge for the joining, equal to the price of 3 feet of the Belt.

Full rolls of Belting, as manufactured for the trade, measure from 250 to 300 feet long; but we cut Belts to order of any length required.

For Belts less than 6 inches wide, the "3 ply" is sufficiently strong, unless the work is unusually heavy for the width. Belts wider than 6 inches should not be less than "4 ply," unless the work is unusually light for the width

COTTON BELTING.

1 inch, per foot	$0 04	6 inch, per foot	$0 40
1½ " "	06	7 " "	45
2 " "	09	8 " "	50
2½ " "	12	9 " "	55
3 " "	16	10 " "	65
3½ " "	20	12 " "	80
4 " "	24	14 " "	1 00
4½ " "	28	16 " "	1 20
5 " "	32	18 " "	1 40
5½ " "	36	20 " "	1 60

CUT LACING.

Size	¼	⅜	½	⅝	¾
Per 100 feet	$1 00	1 25	2 00	2 75	3 25

TIPPED LACING.

Length of Lace.	Width of Lace.	Will Lace the below Widths of Belts.	No. of Holes in Belt, laced double.	Per Gross.
12 inch.	4/16 inch.	1 inch.	2	$1 50
15 "	4/16 "	1¼ & 1½ inch.	2	1 87½
18 "	4/16 "	1¾ "	2	2 25
20 "	4/16 "	2 & 2¼ "	2	2 50
2 feet.	5/16 "	2½ "	3	3 25
2½ "	5/16 "	2¾ "	3	5 00
3 "	5/16 "	3 & 3½ "	4	7 00
3½ "	5/16 "	4 & 4½ "	5	8 50
4 "	6/16 "	5 & 5½ "	5	10 50
4½ "	6/16 "	6 "	6	14 00
5 "	7/16 "	7 & 8 "	6	17 00
5½ "	7/16 "	9 & 10 "	7	20 00
6 "	8/16 "	For Main Belts.		24 00
6½ "	10/16 "	" "		30 00

PAGE'S PATENT LACE LEATHER.

Full Sides, per lb. $0 85

V OR ANGULAR BELT.

inch.		Per running foot.	Pulley, not less than. inch.	inch.		Per running foot.	Pulley, not less than. inch.
½	1 ply.	$0 12½	2	3	4 ply.	$2 80	32
½	2 "	30	4	3	5 "	3 40	36
1	3 "	70	10	3	6 "	4 00	48
1¼	3 "	85	10	3¼	4 "	3 00	48
1½	3 "	1 00	10	3¼	5 "	3 75	48
1½	4 "	1 30	24	3¼	6 "	4 40	48
1¾	3 "	1 20	18	3½	4 "	3 40	48
1¾	4 "	1 55	30	3½	5 "	4 00	48
2	3 "	1 40	24	3½	6 "	4 80	48
2	4 "	1 80	30	4	4 "	3 80	48
2¼	3 "	1 60	24	4	5 "	4 70	48
2¼	4 "	2 00	32	4	6 "	5 50	48
2¼	5 "	2 50	36	5	4 "	4 80	48
2½	3 "	1 80	30	5	5 "	5 90	48
2½	4 "	2 30	32	5	6 "	7 00	48
2½	5 "	2 80	36	6	4 "	5 80	48
2¾	4 "	2 55	36	6	5 "	7 20	48
2¾	5 "	3 10	38	6	6 "	8 50	48

CORDAGE.

MANILA ROPE.

ıch circumference and upward	per lb.	$0 15
ead, or 3/8 inch diameter	"	15½
9 thread, or ¼ and 5-16 inch diameter	"	16
Rope, 2, 3, 4, or 5 thread	"	15
and Point Rope	"	16½
:d Rope and Lath Yarn	"	14¼
;, Leather, and Hop Twine	"	15½

SISAL ROPE.

ıch circumference and upward	per lb.	11
read, or 3/8 inch diameter	"	11½
9 thread, or ¼ and 5-16 inch diameter	"	12
Rope, 2, 3, 4, or 5 thread	"	11
:d Rope and Lath Yarn	"	10½

NEW ZEALAND ROPE.

ıch circumference and upward	per lb.	12
read, or 3/8 inch diameter	"	10½
9 thread, or ¼ and 5-16 inch diameter	"	13
Rope, 2, 3, 4, or 5 thread	"	12
:d Rope and Lath Yarn	"	11½

RUSSIA HEMP.

e Rope	per lb.	18
:d Rope and Ratline	"	13
Yarn	"	12½
Rope	"	17
ine, Houseline, Rounding, and Hambroline	"	17

AMERICAN HEMP.

e Rope	per lb.	17
:d Rope and Ratline	"	12
Yarn	"	11½
Yarn	"	12
ine, Houseline, Rounding, and Hambroline	"	16
and Bell Cord	"	25 to 35

OAKUM.

Oakum	per lb.	10
. Navy	"	8¾
	"	7¾

STEAM PACKING.

RUBBER SHEET PACKING.

ıus Packing, 1-16 inch or less in thickness	per lb.	$0 60
" 3-32 " and upward in thickness	"	50
" cloth insertion, 1-16 inch or less in thickness	"	65
" " " 3-32 " and upward in thickness	"	55
Vulcanized Sheet	"	1 00
ets, Washers, and Rings made of pure Vulcanized Rubber	per lb.	1 00 to 1 50
" " Fibrous Packing	per lb.	60
re Piston and Valve Rod Packing of all sizes, cut to the most exact dimensions,	"	80

:he above Packing is made in sheets of any thickness or length, and about one yard wide. 'or cutting rubber use a sharp knife and keep it wet.

Stone Packing	per lb.	20
: "	"	25
n's "	"	50
re "	"	1 25
Gum Core Packing	"	1 50
s, Round or Square	"	80
ıattan Packing	per lb., ¼ inch, $1 25 ... 3/8 inch, $1 50 ... Over 3/8 inch,	1 00
ıt American Packing	per lb., 1/8 " 2 00 ... " 1/8 "	1 00
:nnial "	per lb.	25
g's Metallic "	"	90
ıtos "	"	1 00

IN FULL COILS OF ONE HUNDRED POUNDS.

n Hemp Packing, A	per lb.	$0 22
" " B	"	19
an " "	"	20
ican " " No. 1	"	16
" " " 2	"	14
Packing	"	12
n "	"	35

PACKING HOOKS AND SCREWS.

 Each $0 50

Fig. 1281. Fig. 1282.

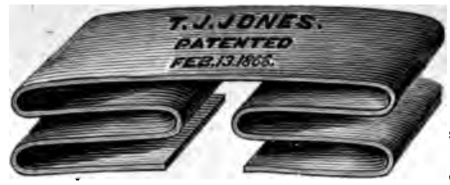


Fig. 1283.

JONES' PATENT PACKING SPRINGS.

Per inch of diameter of Cylinder, $1 25

Parties ordering these springs should send the following dimensions: diameter of Cylinder; depth and width of packing space; thickness of packing rings.

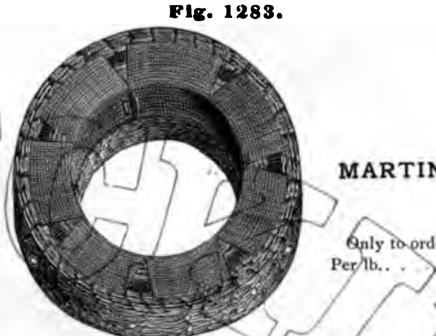


Fig. 1284.

MARTIN'S PATENT PACKING RINGS.

Only to order, sizes being given.

Per lb. $1 25

Fig. 1285.

HAIGHT'S PACKING SPRINGS.

Prices according to sizes.

WASTE.

In bales of about four hundred pounds. We also have, for the convenience of our customers, small bales of one hundred pounds, for which we charge one half cent per pound extra.

No. 1—Cop	per lb.	$0 12	No. 1—Colored	per lb.	$0 08
" 1—Machined, New	"	13	" 2— "	"	06
" 1—Washed	"	10	Wool Waste	"	

Imported Sweat or Wiping Cloths, per dozen.... $3 00

HAIR AND WOOL FELTING.

FOR COVERING MARINE, LOCOMOTIVE, AND STATIONARY BOILERS.

The best material to prevent loss of heat by condensation or radiation. It is made from pure hair, from one half inch to two inches in thickness, backed with wood felting one eighth of an inch thick, tacked and fastened securely to it.

This article is warranted to save twenty per cent in fuel, or many times its cost. It is made in strips six feet wide, and can be cut in any lengths.

HAIR, WOOL BACK, OR HAIR AND CANVAS.

No. 1— inch thick, per square foot	$
" 2— ½ " " "	18
" 3— ¾ " " "	20
" 4—1 " " "	22
" 5—1½ " " "	25

ALL HAIR.

No. 1— inch thick, per square foot	.
" 2— ½ " " "	6½
" 3— ¾ " " "	8
" 4—1 " " "	9½
" 5—1½ " " "	16
Wood Felting	35

We also have a very heavy Wool Felt, for city car boxes, which gives entire satisfaction Per pound, $2 00.

Polishing Felt, per pound, $2 50.

Fig. 1286.

ROUND BELT COUPLINGS.

Diam. of Belt, in.	1/8	5-32	3-16	7-32
Per doz. pair	$3 25	2 75	2 25	2 25
Diam. of Belt, in.	1/4	9-32	5-16	11-32
Per doz. pair	$2 25	2 50	2 75	3 00
Diam. of Belt, in.	3/8	7-16	1/2	9-16
Per doz. pair	$3 25	3 75	4 50	5 50

Diam. of Belt, in.	5/8	11-16	3/4	13-16	7/8	15-16	1	1 1/8	1 1/4
Per doz. Pair	$7 25	8 25	10 00	13 25	16 50	20 00	24 00	33 00	53 00

BELT HOOKS.

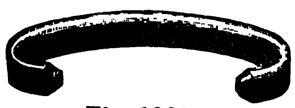


Fig. 1287.

No.	15	14	13	12	11	10
Per 1000	$1 75	2 00	2 25	2 50	2 75	3 00
No.	9	8	7	6	5	4
Per 1000	$3 50	4 00	5 00	7 00	8 50	10 00

BLAKE'S PATENT BELT STUDS.

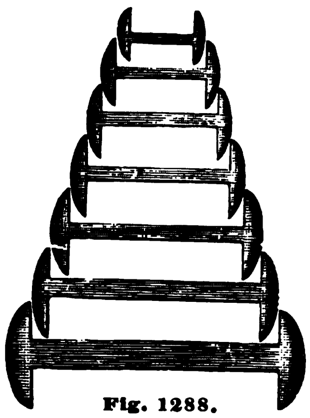


Fig. 1288.

No. 5, per box	$0 70
" 4, "	80
" 3, "	90
" 2, "	1 25
" 1, "	1 65
" 0, "	2 00
" 00, "	2 50

Rubber Cutters	$1 25
Leather "	90
Awls	25

BELT PUNCHES.

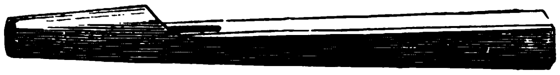


Fig. 1289.

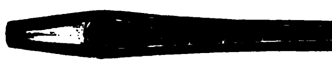


Fig. 1290.

Nos. 1 to 6	per doz., Round,	$2 50;	Oval, $2 75
" 7 to 9,	" "	2 75;	" 3 50
" 10 to 12,	" "	3 00;	" 3 50
" 13 to 16,	" "	4 50;	" 4 75

Fig. 1291.

Large Round, single handle, from 1/2 to 7/8 inch, per doz.	$10 00
" " " " " 1 to 1 1/8 " "	15 00
" " double " " 1 1/8 to 1 1/4 " "	20 00
" " " " " 1 3/8 to 1 5/8 " "	24 00
" " " " " 1 3/4 to 2 " "	33 00
" " " " " 2 1/8 to 3 " "	42 00

BAUER'S PATENT BELT PUNCH.

Fig. 1292.

This instrument is for punching any of the substances usually punched with spring punches. It differs from others in several points. First, the socket punch, *c*, is not riveted in the jaw, *B*, as usual, but is held in by a screw with a milled head, *d*, so that it can be quickly withdrawn, and another put in its place. Second, there is a tube, *D*, to hold four or more spare punches, which may punch holes of different sizes; and when any or all these punches are worn out, others can be purchased. Thus the instrument may last for an age, whereas a common spring punch is useless as soon as its one punch is worn out or broken. All sizes of punches made to order, and warranted to fit stocks now in use.

Per dozen.......................................$24 00

CHAMPION BELT HOOK.

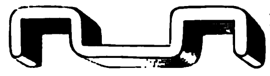


Fig. 1293.

No. 1. For Narrow, Light-Running Belts, per 1000	$6 00
" 2. For any Belt not over 4 inches in width, per 1000,	7 00
" 3. For Rubber or Leather Belts of any width "	9 00
Hand Punches for each sized Hook, each	1 50

FOSTER'S PATENT COMBINATION BELT PUNCH.

Fig. 1294.

Per dozen.......................$24 00 Extra Tubes, per dozen, net............$1 75

BELT AWLS.

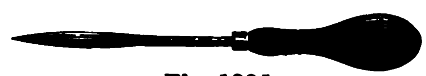


Fig. 1295.

Cast Steel Blades, Black Ebony finished Handles, per doz.......$2 35

BELT AND HOSE COPPER RIVETS AND BURS.

Nos.	7	8	9	10	11	12	13	14	10
Per lb.	$0 49	50	52	54	56	58	60	65	75

Brass Rivets not less than Copper. Copper and Brass Rivets and Burs made to particular sizes and patterns, special price, not less than corresponding rates.

PATENT BELT TIGHTENER.

FOR DRAWING BELTS TOGETHER FOR THE PURPOSE OF LACING THEM.

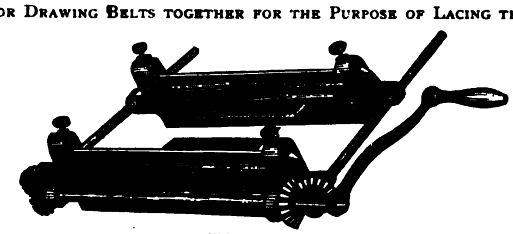


Fig. 1296.

Size, inch.	6	8	10	12	14	16	18	20	22	24	26	30
Each	$15 00	16 00	18 00	20 00	22 00	23 00	25 00	26 00	28 00	30 00	34 00	36 00

LYLE'S PATENT REVOLVING PUNCH.

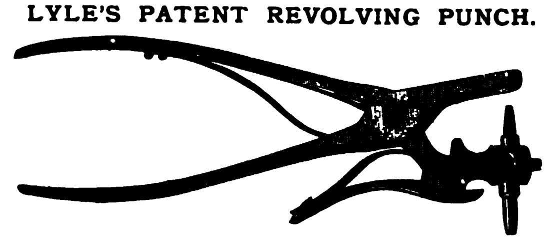


Fig. 1297.

No. Tubes	4	5	6
Per dozen	$18 00	21 65	25 35

SIDE SPRING PUNCHES.

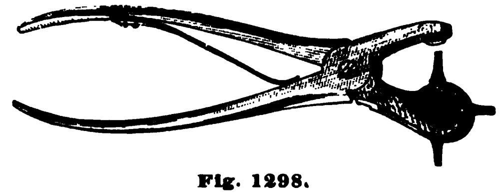


Fig. 1298.

No. Tubes	4	5	6
Per dozen	$16 00	18 00	20 00

COMMON SPRING PUNCHES.

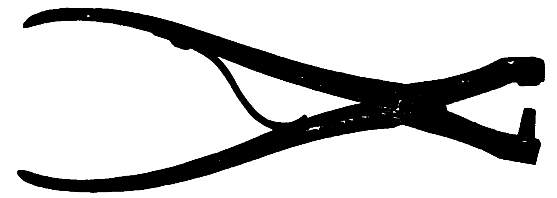


Fig. 1299.

Nos.	000 to 10
Per dozen	$6 00

WASHER CUTTERS.

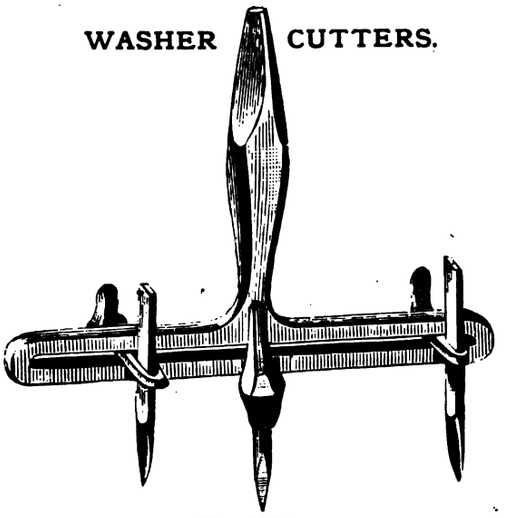


Fig. 1300.

ade of the Best Material, per dozen $14 00

PATENT WASHER CUTTERS.

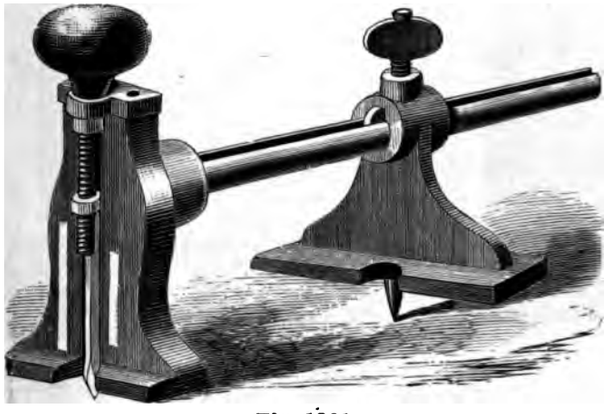


Fig. 1301.

his Cutter is arranged for cutting Washers from 5 to 28 inches, outside diameter, thereby doing the same work as the small Cutter, with extra sizes, inclusive, per dozen.....$60 00

DOUBLE WASHER CUTTERS.

USED WITH ORDINARY BRACE.

Fig. 1302.

er dozen.....$14 00

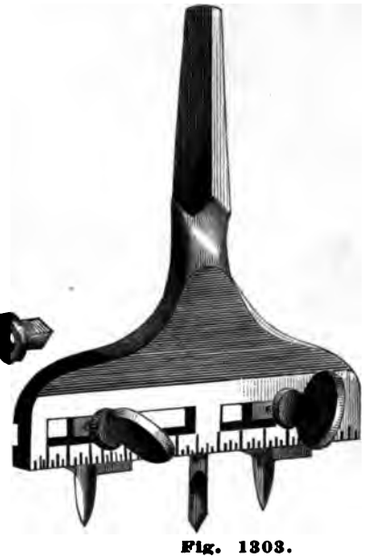


Fig. 1303.

Per dozen.....$18 00

Fig. 1304.

Per dozen.....$18 00

HAND PUNCHES FOR BELTS.

Fig. 1305.

Best Cast Steel, per dozen.....$2 50

BELT AWLS.

Fig. 1306.

Best Cast Steel, per dozen.....$2 00

SPRING KEYS.

Fig. 1307.

No.	000,	are	12	Wire Gauge,	for	7-32	in. hole in	5/8	in. Bolts, per 1000,	$5 00
"	00,	"	12	"	"	7-32	"	3/4	" " "	5 50
"	0,	"	12	"	"	7-32	"	7/8	" " "	6 00
"	1,	"	11	"	"	1/4	"	5/8	" " "	6 50
"	1½,	"	11	"	"	1/4	"	7/8	" " "	6 75
"	2,	"	10	"	"	9-32	"	5/8	" " "	7 00
"	3,	"	10	"	"	9-32	"	7/8	" " "	7 50
"	4,	"	10	"	"	9-32	"	1	" " "	8 00

SPRING COTTERS.

Fig. 1308.

No.	30,	are	13	Wire Gauge,	for	3-32	in. hole in	1/2	in. Bolts, per 1000,	$3 50
"	31,	"	13	"	"	3-32	"	3/4	" " "	3 75
"	32,	"	11	"	"	1/8	"	3/4	" " "	4 50
"	33,	"	11	"	"	1/8	"	7/8	" " "	4 75
"	34,	"	7	"	"	3-16	"	7/8	" " "	7 00
"	35,	"	7	"	"	3-16	"	1	" " "	7 50
"	36,	"	4	"	"	1/4	"	1	" " "	13 00
"	37,	"	4	"	"	1/4	"	1¼	" " "	14 00
"	38,	"	1	"	"	5-16	"	1¼	" " "	19 00
"	39,	"	1	"	"	5-16	"	1½	" " "	21 00

FLAT SPRING KEYS.

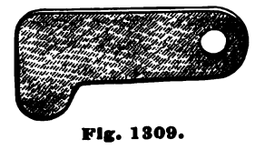


Fig. 1309.

The prices of these vary with the size. We can make them any size and in any quantity.

Fig. 1310.

NAIL OR CLAW HAMMERS.

Adze Eye, No.	1	1½	2	3
Weight, each	1¼ lb.	1 lb.	13 oz.	7½ oz.
Per dozen	$11 25	10 00	8 50	6 50
Adze Eye, Bell Face, No.	1	1½	2	3
Weight, each	1¼ lb.	1 lb.	12 oz.	7 oz.
Per dozen	$12 00	11 00	9 50	7 25

Fig. 1311.

MACHINISTS' HAMMERS.

SOLID CAST STEEL.

Fig. 1312. Fig. 1313. Fig. 1314.

Weight of Head	8 to 14 oz.	1 lb.	1¼ lb.	1½ lb.
Handled, per doz.	$12 00	13 00	14 00	16 00
Weight of Head	1¾ lb.	2 lbs.	2½ lbs.	3 lbs.
Handled, per doz.	$18 00	20 00	24 00	28 00

Heads without handles, $1 00 less.
In ordering, give number on hammer to specify pattern wanted.

POLISHED ENGINEERS' HAMMERS.

HANDLED.

SOLID CAST STEEL. (Fig. 1315.)

No.	0	1	2	3	4
Weight, lbs., doz.	18	23	31	37	48
Per doz.	$9 00	12 00	15 00	18 00	21 00

Fig. 1315.

POLISHED RIVETING HAMMERS.

HANDLED.

SOLID CAST STEEL. (Fig. 1316.)

No.	1	2	3	4	5	6
Weight, lbs., doz.	6	9	12	14	16	18
Per doz.	$4 25	5 00	5 75	6 50	8 50	9 75

Fig. 1316.

Fig. 1317.

PLANISHING HAMMER.

Per Pound..... $1 00

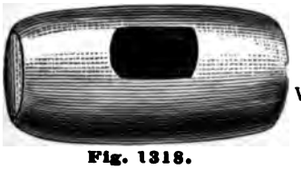


Fig. 1318.

COPPER HAMMER.

Weighing each 1 to 10 lbs., per lb... $0 50

PATENT BABBITT HAMMERS.

Fig. 1319.—Handle and Molds.

Fig. 1320.—Hammer Complete.

Size, inch	2	3	4	5
Handles, each	$0 50	60	75	1 00
Molds, per pair	1 00	1 50	2 00	2 50
Hammer, complete, and one pair Molds	1 75	2 50	3 50	4 50

RIVET SETS.

Fig. 1321.

Nos. 5, 6, 7, 8, per doz..... $6 25
Larger sizes in proportion.

RIVET SET AND HEADERS.

Fig. 1322.

Nos.	00 and 0	1 and 2	3 and 4	5 and 6	7 and 8
C. S., extra, each,	$0 75	63	50	37	32

Ornament Sets..... $0 38

NAIL SETS.

Fig. 1323.

Usual, per gross..... $7 00
Large, " 9 00

SNIPS FOR CUTTING METAL.

Fig. 1324.—HAND.

Fig. 1325.—BENCH.

Cutting, inches,	2½	3	3½	4	4½			
Hand, each	$1 50	1 75	2 00	2 50	3 00			
Cutting, inches,	6	7	8	8½	8½	9	10½	12
Bench, per pair,	3 50	4 00	5 00	6 00	7 00	8 00	12 00	13 50

STUBS' HAND SNIPS.

Size, inches	5	6	7	8	9	10
Per dozen	$9 00	10 80	12 10	14 50	19 00	21 00

HACK SAWS AND FRAMES,

FOR CUTTING METALS.

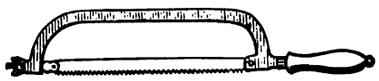


Fig. 1326.

Size, inches	4	5	6	7	8	10	12
Best American Frames, per doz.,			$16 00		18 50	21 50	24 00
Stub's Frames, with Blades, "	$18 00	21 60	25 25	28 80	32 40	39 60	46 80
" Saw Blades, "	1 80	2 50	3 00	3 60	4 20	5 40	6 60

NIPPERS AND PLIERS.

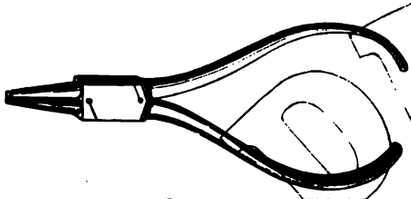


Fig. 1327.—ROUND NOSE PLIERS.

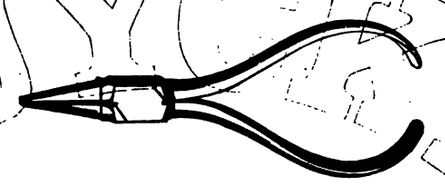


Fig. 1328.—FLAT NOSE PLIERS.

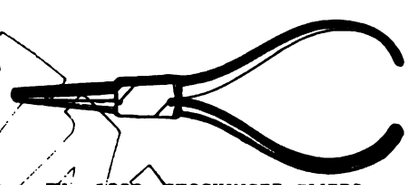


Fig. 1329.—STOCKINGER PLIERS.

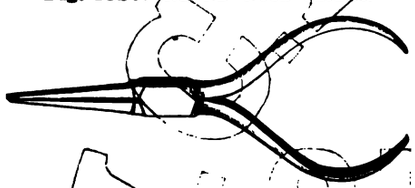


Fig. 1330.—LONG FLAT NOSE PLIERS.

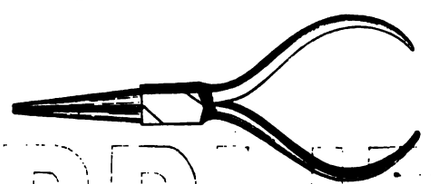


Fig. 1331.—LONG ROUND NOSE PLIERS.

Fig. 1332.—END CUTTING PLIERS.

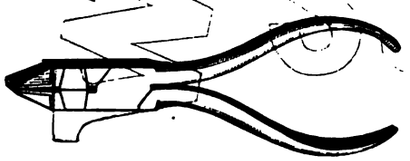


Fig. 1333.—SIDE CUTTING PLIERS.

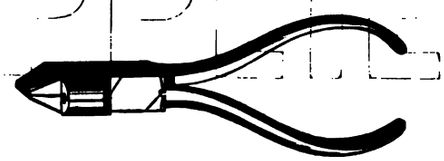


Fig. 1334.—SIDE CUTTING PLIERS.

Fig. 1335.—SIDE CUTTING PLIERS.

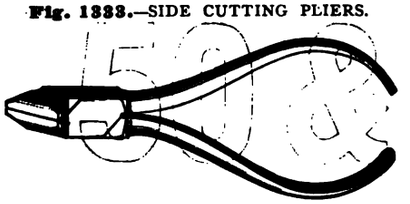


Fig. 1336.—DIAGONAL CUTTING PLIERS.

WARRANTED.

Size, inches	3 to 4½	5	5½	6	6½	7	8
Flat or Round Nose Pliers	$4 13	4 73	5 47	6 40	7 70	8 65	12 00
" " Long Nose Pliers	4 32	4 85	5 95	6 96			
Weaver Pliers	4 32	4 85	5 95	6 96			
End Cutting Pliers	5 68	5 68	7 60	10 80	12 10	14 40	18 00
Side " " Black, Raised Cutter..	8 40	8 40	9 00	9 75	10 50	11 65	14 90
" " " Bell Hangers'.....							
" " " Flat Cutter.....							
Diagonal Cutting Pliers.....							

STUBS' PLIERS.

Flat, Long Nose, Stockinger, Round, Half Round, and Snipe Nose.

Size, inches	4½	5	5½	6	6½	7	7½	8
Per dozen	$6 60	7 20	8 40	10 80	14 50	16 80	19 80	24 00

Bell Hangers' or Bottlers' Pliers.

Size, inches	5½	6	6½	7	8
Per dozen	$12 00	13 20	16 80	21 60	28 80

Cutting Nippers, End and Side.

Size, inches	5	5½	6	6½	7	7½	8
Per dozen	$12 10	12 80	16 80	19 80	20 80		28 00

Cutting Pinchers.

Size, inches	5	6	7	8	9	10
Per dozen	$9 00	10 80	12 10	14 40	18 90	21 00

WIRE SHEARS AND PLIERS COMBINED.

Fig. 1337.

Size, inches	4½	6	8
Extreme Cutting, No. Wire	14	11	8
Per dozen	$10 00	12 00	15 00

Round or Flat Nose same price.

EUREKA NIPPERS.

Fig. 1338.

Size, inch	4	5	6
Per dozen	$12 00	15 00	18 00

EXTRA HEAVY CUTTING NIPPERS.

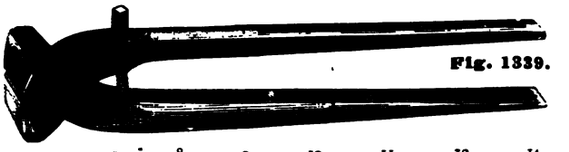


Fig. 1339.

Size, inch	7	8	9	10	11	12	14
Per Pair	$1 75	2 00	2 25	2 50	2 75	3 00	3 50

CAREW'S PATENT WIRE CUTTER.

Fig. 1340.—With Interchangeable Jaws.

Size, inch	10	12	14
Each	$2 00	2 25	2 50

MILLER'S PATENT EXTENSION DIVIDERS.

Serve three purposes: 1st. That of the ordinary one. 2d. They are Extension Dividers. 3d. Pencils can be used by removing the points.

Size, inch	5, Brass.	6, Steel.	7	8
Per dozen	$9 00	$9 00	10 00	11 00
Size, inch	10	10, Double.	15, Single.	
Per dozen	$12 00	13 00	21 00	

Fig. 1341.

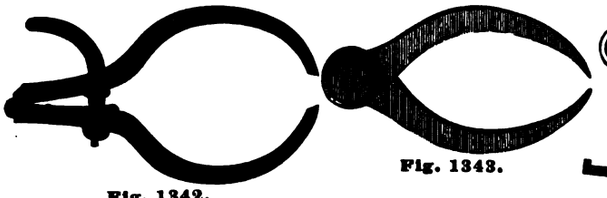


Fig. 1342.

Fig. 1343.

Fig. 1344.

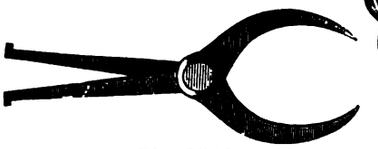


Fig. 1345.

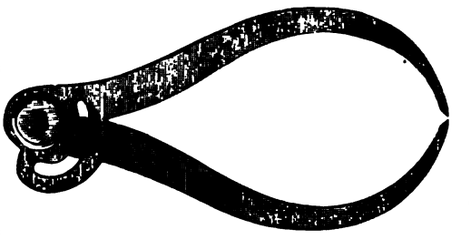


Fig. 1346.

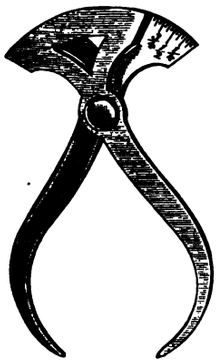


Fig. 1347.

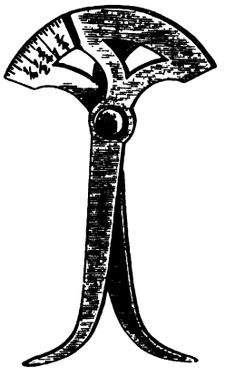


Fig. 1348.

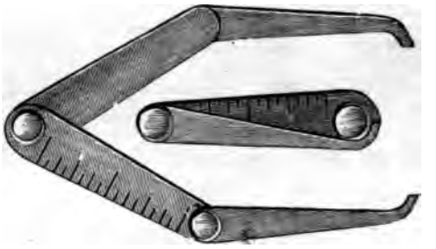


Fig. 1349.

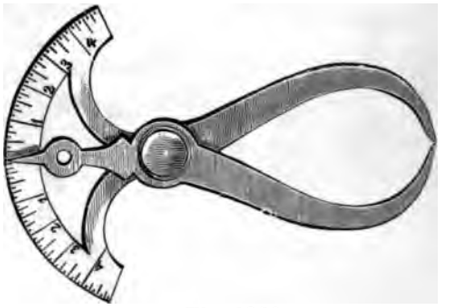


Fig. 1350.

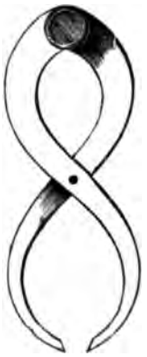


Fig. 1351. **Fig. 1352.**

Size, inch.	Wing Calipers. Fig. 1342.	Inside and Outside Calipers Figs. 1343, 1344.	Double Calipers. Fig. 1345.	Inside and Outside Calipers, with Screw. Fig. 1346.	Register Calipers. Figs. 1347, 1348.	Folding Calipers, with Rule. Fig. 1349.	Register Calipers. Fig. 1350.	Fancy Calipers. Fig. 1351.	Navy Calipers. Fig. 1352.	Polished Steel Compasses. Fig. 1353.	Compass Dividers. Fig. 1354.
2½	.....	$3 00	.....	.....	.....	.....	.....	3 50	.....	.....	.....
3	.....	3 00	3 50	.....	7 50	.. ..	.....	.. ...	3 50	3 00	.....
4	.....	3 25	4 25	.....	.....	.. ..	.....	.....	.....	3 25	.....
5	$6 50	3 75	5 00	.....	.....	.....	.....	.....	.....	3 50	5 25
6	7 00	4 25	6 00	9 00	.....	7 50	13 00	... ..	.....	4 00	5 50
7	7 50	5 00	.....	.....	.....	.....	.....	.....	.....	4 25	6 50
8	8 00	6 00	.....	. ....	.....	.... .	.....	.. .	.....	5 50	7 00
9	.... .	6 75	.....	.....	.....	.....	.....	.....	... ..	.....	7 50
10	11 00	7 25	.....	.....	.....	.....	.....	.....	.....	.....	8 50
11	.....	8 00	.....	.....	.....	.....	.....	.....	.....	.....	9 50
12	14 00	9 00	.....	.....	.....	.....	.....	.. . .	.....	.....	10 50
14	.....	14 00	.....	.....	.....	.....	.....	... ..	..	.....	.....
15	24 00	.. .	.....	.....	.....	.....	.....	.....	.....	.....	12 50
16	.....	18 00	.....	.. ..	.....	.....	.....	.. ..	.....	.....	.....
18	36 00	24 00	.....	. . ..	.....	.....	.....	.....	.....	.....	15 00
20	42 00	30 00	.....	.....	.....	.....	.....	.....	.....	.....	20 00
22	48 00	36 00	.....	.....	.....	.....	.....	.....	.....	.....	25 00
24	54 00	42 00	.....	.....	.....	.....	.....	.....	.....	.....	30 00

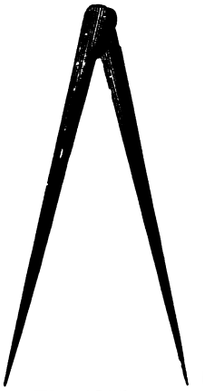


Fig. 1353.

Fig. 1354.

CALIPERS.

Fig. 1355.

Fig. 1356.

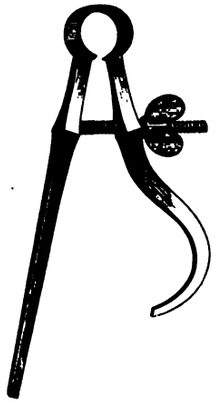


Fig. 1357.

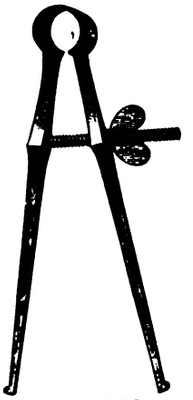


Fig. 1358.

Fig. 1359.

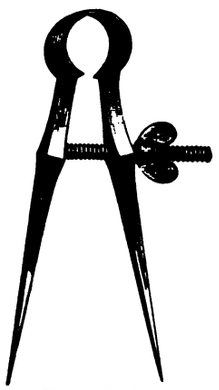


Fig. 1360.

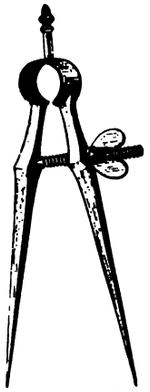


Fig. 1361.

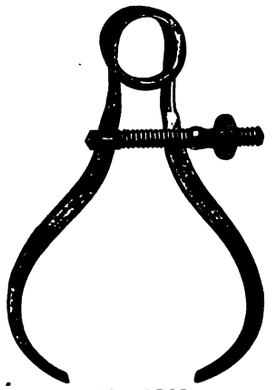


Fig. 1362.

Fig. 1363.

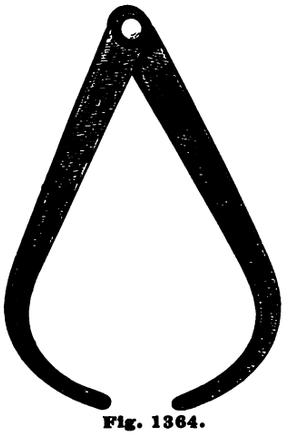


Fig. 1364.

Fig. 1365.

Fig. 1366.

Fig. 1367.

Fig. 1368.

Sizes, inches	1	1½	2	2½	3	3½	4	5	6
Fig. 1355—Spring Calipers, per dozen				$11 50	11 50		14 50	15 00	
" 1356— " Screw Calipers, per dozen					11 50	11 50		15 00	
" 1357— " Keyhole " "					13 50			17 50	
" 1358— " Inside " "								15 00	
" 1359—Right and Left Hand Screw Calipers, per dozen								15 00	
" 1360—Spring Dividers, per dozen			11 50			11 50	14 50	15 50	
" 1361— " " "						13 75		17 50	
" 1362—Patent Helical Coil Spring Calipers, per dozen			8 00	8 00	8 00		10 00	10 00	
" 1363— " " " " Dividers, "						8 00	10 00	10 00	
" 1364—Firm Joint, Outside or Inside Calipers, per dozen									7 50
" 1365—Call's Patent Inside Calipers, per dozen							9 75		11 00
" 1366, 1367—Star Calipers, Inside and Outside, per dozen					9 00			12 00	
" 1368—Star Compasses, per dozen					9 00			12 00	

STANDARD STEEL RULES.

Size, inch	1	2	3	4	6	9
Each	$0 25	40	50	75	1 00	1 50
Size, inch	12	18	24	36	48	
Each	$2 00	3 00	4 00	8 00	12 00	

The rules in this list are divided five ways in parts of inches, as follows:

	No. 1 Graduations.	No. 2 Graduations.	No. 3 Graduations.
1st cor.	10, 20, 50, 100	10, 20, 50, 100	16, 32, 64
2d "	12, 24, 48	12, 24, 48	16,
3d "	16, 32, 64	16, 32, 64	16,
4th "	14, 28	8,	8,

	No. 4 Graduations.		No. 6 Graduations.
1st cor.	64	1st cor.	32, whole length.
2d "	32	2d "	48, "
3d "	16	3d "	50, "
4th "	8	4th "	64, "

12 inch Steel Rule of No. 5 Graduation $3 00
24 " " " 5 " 6 00

No. 5 Graduations.

1st cor. 16, 32, 64
2d " 11, 14, 15, 17, 18, 19, 20, 21, 22, 23, 24, 25
3d " 26, 27, 28, 29, 30, 31, 33, 34, 35, 36, 37, 38
4th " 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 100

GEAR RULES.

12 inch Steel Rule, divided to 18, 20, 22, 24, 26, 28, 30, and 32 parts of an inch, whole length $3 00
12 inch Steel Rule, divided to 6, 7, 8, 9, 10, 11, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, and 38 parts of an inch, one inch of each division 3 00

The Rules of No. 5 Graduation can also be used for sizing gears.

SHRINK RULES.

24¼ inch Steel Rule, shrink on one side and standard on the other. Divided on each side to 10, 20, 50, 100, 12, 24, 48, 16, 32, and 64 parts of an inch $4 50
24¼ inch Steel Rule, shrink on both sides, No. 1 Graduation 4 50
24¼ inch Boxwood Rule, shrink on both sides, No. 1 Graduation 3 00

STANDARD STEEL YARD MEASURES.

Divided on one side to inches and eighths, and on the other side to 1-16, ⅛, ¼, ⅜, ½, ⅝, ¾, and ⅞ of a yard.
Size, 1 inch wide, ⅛ inch thick $3 00

BEVELED STEEL STRAIGHT EDGES.

inch long	inch wide	inch thick	
12	1⅜	3-16	$2 50
18	1¾	3-16	3 00
24	2	3-16	4 00
36	3	¼	9 00
48	3	¼	12 00

The beveled edges are 1-16 inch thick. Only one edge is beveled.

HARDENED STEEL STRAIGHT EDGES.

inch long	inch wide	inch thick	
5⅝	1⅛	1-12	$1 00
7	1½	1-12	1 25
10¾	1⅝	1-12	2 00
14	2	1-12	3 00
17	2¼	1-12	3 50
20	2¾	1-10	4 50
27	3	1-10	7 00
33	3	1-10	9 00
39	3½	1-8	12 00

These Straight Edges are the tongues of the Hardened Cast Steel Try Squares, and are hardened on the edges only.

STEEL STRAIGHT EDGES.

FOR DRAUGHTSMEN.

inch long	inch wide	inch thick	
15	1¼	1-20	$1 14
18	1½	1-20	1 62
24	1½	1-18	2 16
30	1¾	1-18	3 15
36	2	1-16	4 32
42	2¼	1-16	5 67
48	2½	1-14	7 20
60	2¾	1-12	9 90

STANDARD STEEL RULES.

FRENCH MEASURE.

Size, Metre	1-20	1-10	1-5	3-10	½	1
Each	$0 45	85	1 75	2 50	4 00	10 00

SQUARE STEEL RULES.

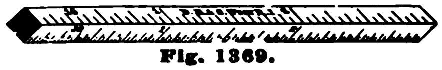


Fig. 1369.

Size, inch	3	4	6
Each	$0 50	75	1 00

Graduations.
8, 16, 32, 64 to the inch, whole length.
16, 32, 64, 100 " " "
16, 64, 50, 100 " " "

TRIANGULAR STEEL RULES.

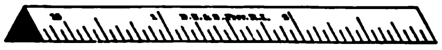


Fig. 1370.

Size, inch	3	4	6	12
Each	$0 60	80	1 20	3 00

Graduations.
16, 64, 100 to the inch, whole length.
16, 32, 64 " " "
20, 50, 100—12, 24, 48—16, 32, 64 to the inch.

The 12 inch are divided only as follows: 8, 10, 12, 14, 16, 20, 24, 28, 48, 50, 64, and 100 to the inch

STANDARD STEEL STRAIGHT EDGES.

Of same width and thickness as Standard Rules.

inch long	inch wide	inch thick	
6	1	1-10	$0 75
9	1⅛	1-10	1 12
12	1¼	1-10	1 50
18	1½	1-8	2 25
24	2	1-8	3 00
36	2⅜	1-8	6 00
48	3	1-8	9 00

IMPROVED VERNIER CALIPERS.

FRONT SIDE.

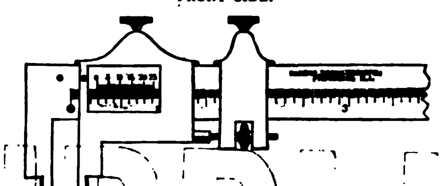


Fig. 1371.—HALF SIZE.

A standard for testing the accurate adjustment of the calipers is made.
Each $3 00

BACK SIDE.

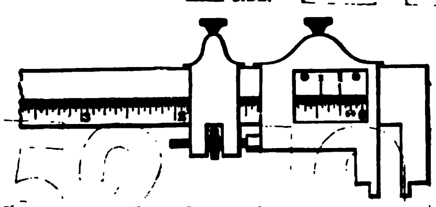


Fig. 1372.—HALF SIZE.

In Morocco Case, 6 inch 25 00
" " 12 " 30 00

STEEL CALIPER RULES.

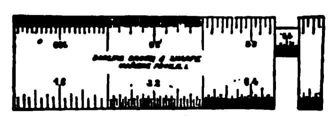


Fig. 1373.

This cut is a fac-simile of one side of these rules. The other side is divided to 12ths, 24ths, 48ths, 8ths, 14ths, and 28ths on the outside, and upon the slide to 32ds and 64ths of inches. When closed they are 3 inches long. The Caliper can be drawn out to measure 2⅛ inches. The thickness of the rule is ⅛ inch.
Each $4 00

DOUBLE CALIPERS.

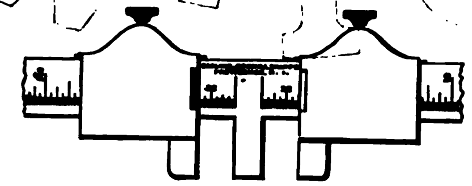


Fig. 1374.—HALF SIZE.

Each $14 00

Whole length, 7½ inches, and will caliper 3⅛ × 4½ inch. Weighs but 4 ounces, and can be readily carried in the pocket. Very useful for machinists and others for selecting iron and steel, as both the width and thickness of flat bars can be tested at once. A larger size, with heavier bar and wood handle, is made for use in rolling or forging iron or steel. Extreme length, including handle, 12 inches, and will caliper 3⅛ × 1⅛ inches.
Each $24 00

SILVER PLATED TRIANGULAR SCALES.

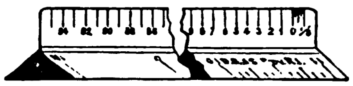


Fig. 1375.

12 inch Triangular Drawing Scale, having six scales for Architects and Mechanical Draughtsmen, ⅛, ¼, ⅜, ½, ¾, and 1 inch to the foot $6 00
12 inch Triangular Drawing Scale, having eleven scales for Architects and Mechanical Draughtsmen, ⅛, ¼, 3-32, 3-16, ⅜, ¾, ½, 1, 1½, and 3 inches to the foot .. 6 00
12 inch Triangular Drawing Scales, having six scales for Engineers, 10, 20, 30, 40, 50, and 60 parts to the inch, 6 00

TRIANGULAR BOXWOOD SCALES.

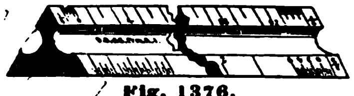


Fig. 1376.

24 inch Triangular Boxwood Rule, divided to scales of ⅛, ¼, ⅜, ¾, ½, 1, 1½, 3, 2, and 4 inches to the foot, and 16ths of an inch $5 00
12 inch Triangular Boxwood Rule, ditto, with 3-16 and 3-32 instead of 2 and 4 inches to the foot 2 00
6 inch Triangular Boxwood Rule, ditto 1 50
24 inch Triangular Boxwood Rule, on one edge to 10ths, 20ths, 30ths, 40ths, 50ths, and 60ths of an inch 5 00
12 inch Triangular Boxwood Rule, ditto 2 00
6 " " " " 1 50

24 inch are divided either 10 to 60 or 20 to 80.

Fig. 1377.

HARDENED CAST STEEL POCKET VERNIER CALIPERS.

FRONT SIDE.

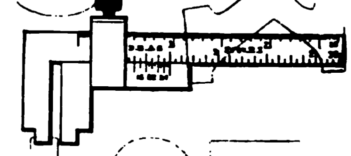


Fig. 1378.—HALF SIZE.

BACK SIDE.

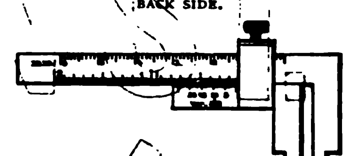


Fig. 1379.—HALF SIZE.

Each $5 00
In Morocco Case 6 00

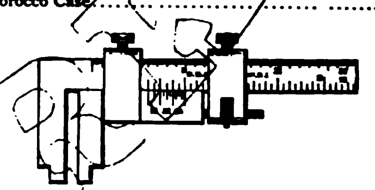


Fig. 1380.—HALF SIZE.

The same instrument, with adjusting screw, as shown in above cut:
Each $6 00
In Morocco Case 7 00

CALIPER SQUARES.

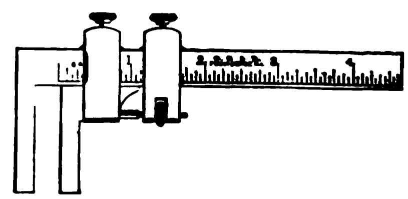


Fig. 1381.

2 inch, without adjusting screw $3 50
4 " " " " 4 50
2 " with " " like cut 4 85
4 " " " " " 5 50

The American Standard Wire Gauge.

Adopted by the Brass Manufacturers, Jan., 1858.

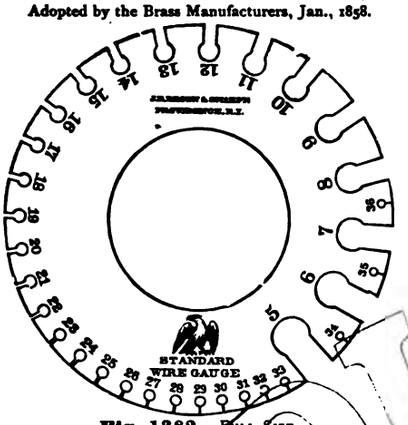


Fig. 1382.—Full Size.

Round Gauges, sizes, 0 to 36..... $6 00
" " " 5 to 36..... 4 00

ANGULAR WIRE GAUGES.

Fig. 1383.—One Third Size.

000 to 9	$8 00	15 to 28	$8 00
7 to 17	8 00	25 to 40	8 00

Divided with both old and new standard..... 12 00

CENTRE GAUGE.

And Gauge for Grinding and Setting Screw Tools.

Fig. 1384.—Half Size.

Each..... $0 50

The angles used in this gauge are 60 degrees. The four divisions upon the gauge of 14, 20, 24, and 32 parts to the inch, are very useful in measuring the number of threads to the inch of taps and screws. The following parts to the inch can be determined by them—namely, 2, 3, 4, 5, 6, 7, 8, 10, 12, 14, 16, 20, 24, and 32.

SHEET METAL GAUGE.

Fig. 1385.—One Third Size.

Each..... $20 00

POCKET SHEET METAL GAUGE.

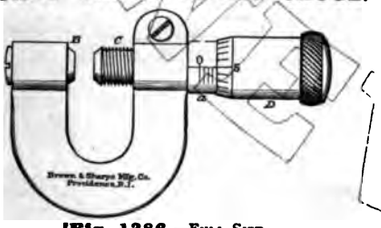


Fig. 1386.—Full Size.

Each..... $6 00
In Morocco Case, each..... 6 50

SCREW PITCH GAUGE.

For 16 Pitches.

Fig. 1387.—Full Size.

Each..... $1 50

COMBINED GAUGE AND CALIPERS.

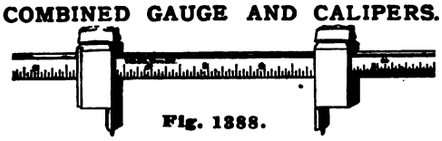


Fig. 1388.

Each..... $5 00

This tool combines Dividers, inside and outside Calipers, and a graduated double scratch gauge. It will caliper a round bar two inches in diameter. The beam is 12 inches long, ¼ inch wide, ¾ inch thick, and is graduated to 16ths, 32ds, and 64ths of an inch.

POCKET SCREW AND WIRE GAUGE.

Cuts One Half Size.

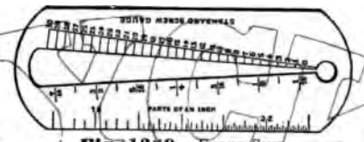


Fig. 1389.—Front Side.

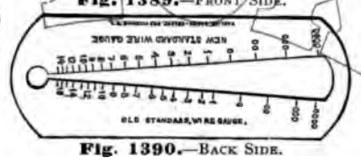


Fig. 1390.—Back Side.

Each..... $2 50

LARGE SCREW AND WIRE GAUGE.

Cuts One Third Size.

Fig. 1391.—Front Side.

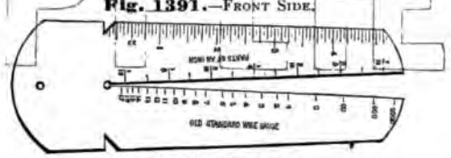


Fig. 1392.—Back Side.

Each..... $5 00
Extra Thick..... 4 25

STEEL MARKING GAUGES.

Fig. 1393.

6 inch, per dozen..... $6 50

ENGLISH STANDARD WIRE GAUGES.

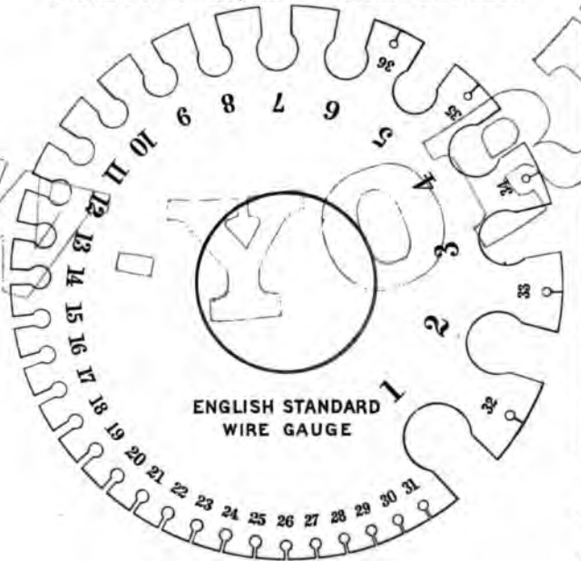


Fig. 1394.

Each..... $2 00

STEEL GAUGES.

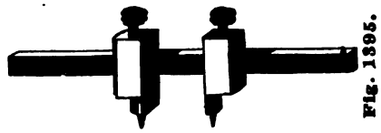
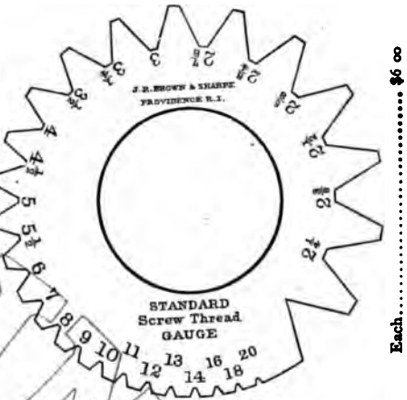


Fig. 1395. Per dozen, $43 50

Standard Screw Thread Gauge.



Each..... $6 00

Fig. 1396.—Full Size.

This Gauge is intended to be used as a standard for grinding tools to cut threads according to the new system recommended for adoption by the Franklin Institute of Philadelphia.

The angles are sixty degrees, and the flat surfaces at top and bottom of threads are equal to one eighth of the pitch.

Tables for screw threads, bolts, and nuts, are furnished with the gauge.

SCREW PITCH GAUGE.

Fig. 1397. Per dozen..... $3 00

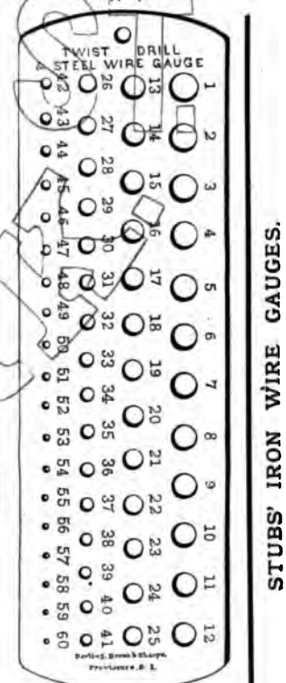


Fig. 1398.

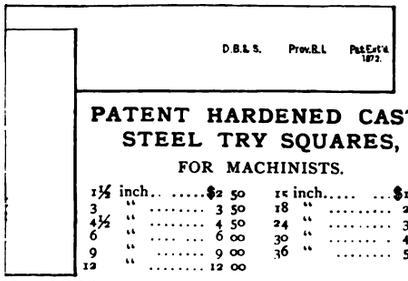
Twist Drill and Steel Wire Gauge.

For gauging Morse Twist Drills and Stubs' Drawn Steel Wire.... $2 50

STUBS' IRON WIRE GAUGES.

1 to 36	$4 50	Steel Wire or Drill, 1 to 60	3 00
Oblong or Circular, 1 to 26	3 50	" " 1 to 70	3 75
Steel Wire or Drill, A to Z	3 00		

UNITED STATES
SQUARE
52 JOHN
NEW YORK

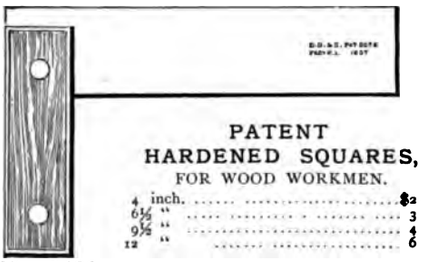


PATENT HARDENED CAST STEEL TRY SQUARES,

FOR MACHINISTS.

1½ inch	$2 50	15 inch	$15 00
3 "	3 50	18 "	20 00
4½ "	4 50	24 "	30 00
6 "	6 00	30 "	40 00
9 "	9 00	36 "	50 00
12 "	12 00		

Fig. 1399.

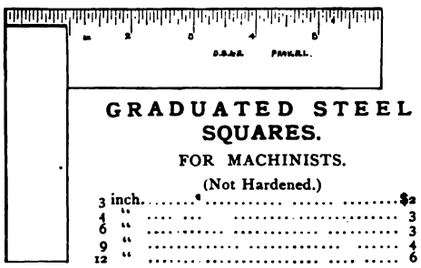


PATENT HARDENED SQUARES,

FOR WOOD WORKMEN.

4 inch	$2 00
6½ "	3 00
9½ "	4 00
12 "	6 00

Fig. 1400.



GRADUATED STEEL SQUARES.

FOR MACHINISTS.

(Not Hardened.)

3 inch	$2 50
4 "	3 00
6 "	3 50
9 "	4 00
12 "	6 00

Fig. 1401.

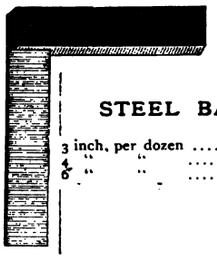


Fig. 1402.

STEEL BACK SQUARES.

3 inch, per dozen	$25 00
4 " "	30 00
6 " "	36 00

KEY SEAT, RULE.

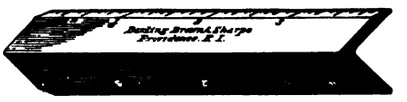


Fig. 1403.

Each $3 00

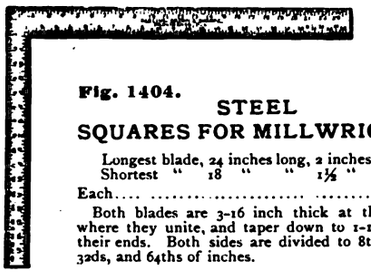


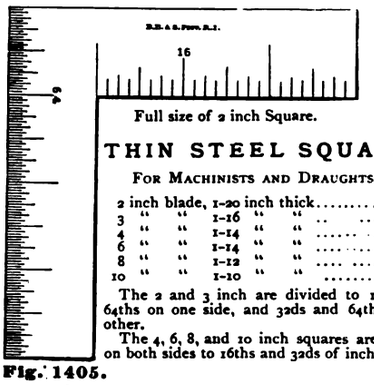
Fig. 1404.

STEEL SQUARES FOR MILLWRIGHTS.

Longest blade, 24 inches long, 2 inches wide.
Shortest " 18 " " 1½ " "

Each $10 00

Both blades are 3-16 inch thick at the corner where they unite, and taper down to 1-16 inch at their ends. Both sides are divided to 8ths, 16ths, 32ds, and 64ths of inches.



Full size of 2 inch Square.

THIN STEEL SQUARES.

FOR MACHINISTS AND DRAUGHTSMEN.

2 inch blade,	1-20 inch thick		$1 50
3 " "	1-16 " "		2 00
4 " "	1-14 " "		2 50
6 " "	1-14 " "		3 50
8 " "	1-12 " "		4 50
10 " "	1-10 " "		5 50

The 2 and 3 inch are divided to 16ths and 64ths on one side, and 32ds and 64ths on the other.

The 4, 6, 8, and 10 inch squares are divided on both sides to 16ths and 32ds of inches.

Fig. 1405.

STEEL BEVELS.

Per doz. $18 00

Fig. 1406.

HARDENED CAST STEEL

T SQUARE AND UNIVERSAL BEVEL.

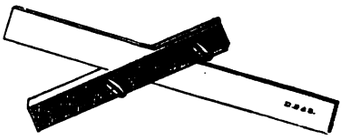


Fig. 1407.

Each $6 00

The head is 5 inches, and the tongue 8 inches long. Both parts are hardened, and ground straight and square. The tongue may be used at the extreme end of the beam. The wide side of the three cornered washer should always be placed next to the blade.

UNIVERSAL OR CENTRE SQUARES.

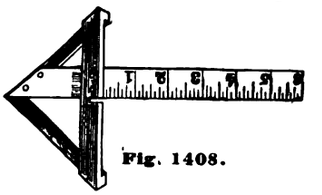


Fig. 1408.

4 inch, each	$3 00
6 " "	3 00
8 " "	4 00
10 " "	5 00
12 " "	6 00

BEVEL PROTRACTOR,

WITH SLIDING ARM, AND HALF CIRCLE DIVIDED TO DEGREES.

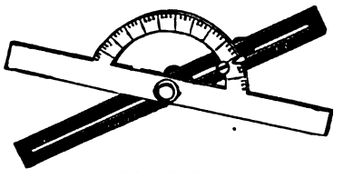


Fig. 1409.

With 6 inch Sliding Arm, each	$6 50
" 10 " " " "	7 00

STEEL SQUARES.

2 inch.,	Pocket, Plain, per doz.		$4 25
2½ "	" " "	"	5 00
2 "	" Marked,	"	5 50
2½ "	" "	"	6 50

Fig. 1410.

MACHINISTS' TRY SQUARES.

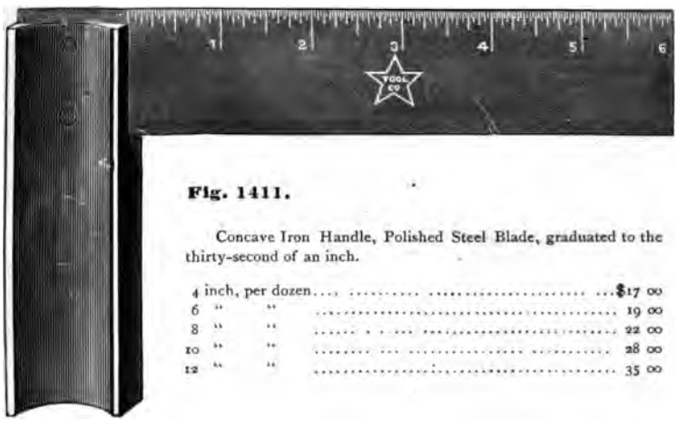


Fig. 1411.

Concave Iron Handle, Polished Steel Blade, graduated to the thirty-second of an inch.

4 inch, per dozen	$17 00
6 " "	19 00
8 " "	22 00
10 " "	28 00
12 " "	35 00

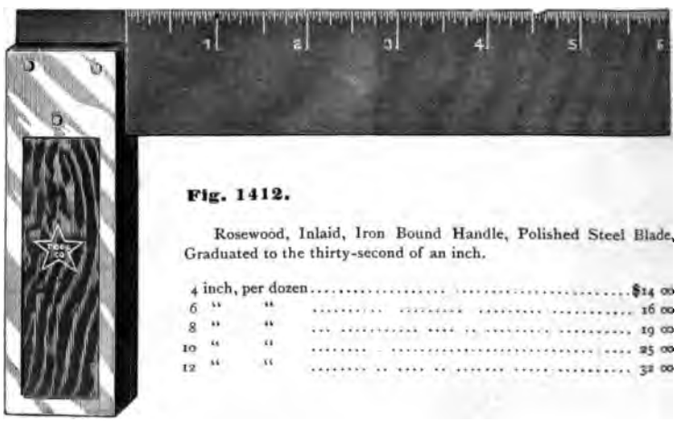


Fig. 1412.

Rosewood, Inlaid, Iron Bound Handle, Polished Steel Blade, Graduated to the thirty-second of an inch.

4 inch, per dozen	$14 00
6 " "	16 00
8 " "	19 00
10 " "	25 00
12 " "	32 00

Size, Fig. 1412, inches	4	6	8	10	12
Polished Rosewood Handle, Polished Steel Blade, Square inside only, Graduated to the 16th of an inch	$4 50	6 00	7 50	9 50	13 50
" " " " " " " " " " 8th "	3 50	4 50	5 25	6 00	7 25
" " " " " " " " and out, " 16th "	7 00	18 50	10 00	12 00	16 00

STAR BEVELS.

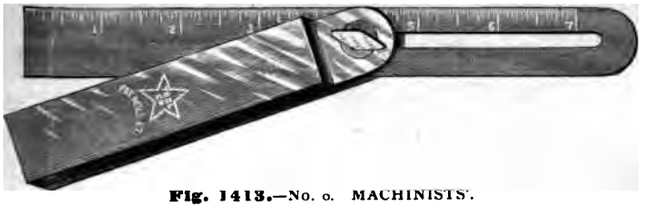


Fig. 1413.—No. 0. MACHINISTS'.

Iron handle, heavy polished steel blades, graduated to the thirty-second of an inch.

Size, inch	6	8	10	12
Per dozen	$10 00	11 00	12 00	13 00

Fig. 1414.—No. 1.

Size, inch	6	8	10	12
No. 1—Polished rosewood handles, heavy polished steel blades, graduated to the sixteenth of an inch	$8 00	9 00	10 00	11 00
No. 2—Equal in every respect to No. 1, with the exception of graduation	6 50	7 50	8 50	9 50
No. 3—Polished rosewood handles, heavy polished steel blade, no graduation	4 50	5 00	5 50	6 00

SPRING STEEL RULES.

Fig. 1415.—MACHINISTS' SCALE.

Size, inch	1	2	3	4	6
Per dozen	$3 00	4 80	6 00	9 00	12 00
Size, inch	9	12	18	24	36
Per dozen	18 00	24 00	36 00	48 00	72 00

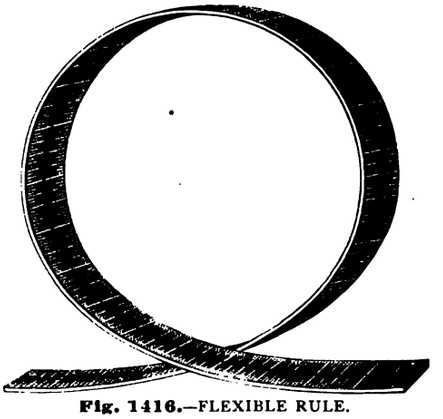


Fig. 1416.—FLEXIBLE RULE.

Size, inch	12	24	36
Each	$2 00	3 75	5 00

Shrink Rule, for Pattern Makers.

24 inch, each $4 00

Fig. 1417.

IMPROVED TRAMMEL POINTS.

PER PAIR.

No. 1—Small, Bronze Metal, Steel Points	$1 50
No. 2—Medium, Bronze Metal, Steel Points	2 00
No. 3—Large, Bronze Metal, Steel Points	2 75

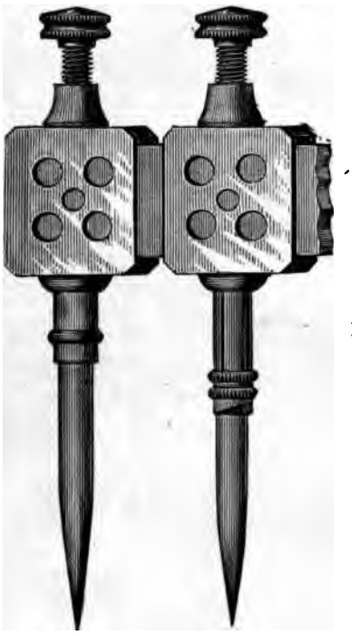


Fig. 1418.

MILLER'S PATENT BRASS EXTENSION TRAMMEL POINTS.

No. 1—Per dozen	$12 00
" 2— "	18 00
" 3— "	24 00
" 4— "	28 00

PLUMB BOBS.

Fig. 1419.

Bronze, with Screw Cap and Steel Point	$2 50
Bronze, without Screw Cap	2 00
Iron, without Screw Cap,	75

Weight, about 8 ounces.

No. 1—Small, Bronze Metal, with Steel Point	$1 75
" 2—Large, " " " " "	2 25
" 5— " Iron " " " "	1 00

Fig. 1420.—ADJUSTABLE.

PATENT ADJUSTABLE TOOL HOLDER.

Fig. 1421.

Hollow handle, with twenty cast steel tools, hard maple handle, with lignum-vitæ cap and adjustable steel chuck. Will hold any thing, from cambric needle to 8 inch mill file

Per dozen..... $12 00

Tool Holders, with Solid Handle, without Tools.

For files, awls, chisels, etc.

Maple Handles, per dozen..... $3 00
Apple Tree " " 4 50

POLISHED HICKORY RAILROAD PICK HANDLES.

Fig. 1422.

36 inch, extra, all white..... $3 25
36 " Second quality..... 2 75

POLISHED HICKORY AX HANDLES.

Fig. 1423.

Packed in 6 and 12 dozen cases.

Size, inch.....	22	25	28	30	32	34	36
All white, extra, per doz.	$2 00	2 25	2 50	2 50	2 75	3 00	3 25

POLISHED HICKORY ADZE HANDLES.

Fig. 1424.

In cases of 6 and 12 dozen each.

Extra, per dozen..... $3 25
No. 1 " 2 75
" 2, a " 2 00
" 2, b " 1 50

POLISHED HICKORY SLEDGE HANDLES.

Fig. 1425.

Size, inch.....	24	28	30	32	34	36	38	40
Extra, per dozen..	$1 50	1 75	1 75	2 00	2 25	2 25	2 50	2 75
No. 1, " ..	1 12	1 38	1 50	1 65	1 75	1 75	2 25	2 50
" 2, " ..	1 00	1 12	1 25	1 38	1 50	1 50	1 75	2 00

POLISHED HICKORY BLACKSMITHS' HAMMER HANDLES.

Fig. 1426.

Size, inch.....	16	18	20	22	24
Per dozen.....	$0 75	90	1 12	1 25	1 50

POLISHED HICKORY MACHINISTS' AND ENGINEERS' HAMMER HANDLES.

Fig. 1427.

Size, inch...	13	14	15	16	17	18	19	20	22	24
Per dozen..	$0 50	55	60	70	80	90	1 00	1 12	1 25	1 50

POLISHED HICKORY MAUL AND TURNING HAMMER HANDLES.

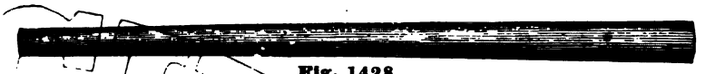


Fig. 1428.

Size, inch.....	24	28	30	32	34	36
Per dozen.....	$1 60	1 80	1 90	2 38	2 62	3 00

FILE HANDLES.

Fig. 1429.

Common, Soft Wood, per dozen..... $0 35
Hard Wood, Polished, - " 50
Apple Tree Wood, for Jewelers, per dozen..... 45
Beaded Pattern, Brass Ferrule, " 40
" " Large Brass Ferrule, per dozen..... 50

MILLING WHEEL HOLDERS.

Fig. 1430.

Each..... $0 75

KNURLS, OR MILLING-WHEELS.

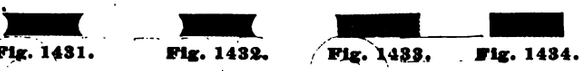


Fig. 1431. Fig. 1432. Fig. 1433. Fig. 1434.

Various Patterns, each... ..... $0 50 and 80

CHASERS.

Fig. 1435. Fig. 1436.

For cutting screws from 10 to 48 threads to the inch, per pair..... $1 00

PATENT GAS HEATER.

Fig. 1437.

For tempering drills, punches, chisels, small tools, etc.

Each..... $1 00

FOLDING GAS HEATER.

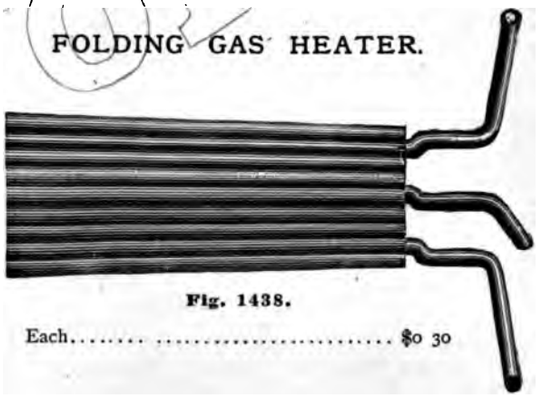


Fig. 1438.

Each..... $0 30

STEEL LETTERS AND FIGURES, FOR NAME STAMPS.

Size, inch	1-64 to 1/8	9-64	5-32	3-16	7-32	1/4	9-32	5-16
Letters, per set	$4 40	4 84	5 28	5 72	6 16	6 60	7 68	8 16
Figures, "	1 45	1 62	1 75	1 90	2 05	2 20	2 56	2 75
Letters and Figures, each	21	24	25	28	30	33	37	40
Size, inch	11-32	3/8	1/2	5/8	3/4		7/8	1
Letters, per set	$8 64	9 12	12 00	15 00	20 00		24 00	27 00
Figures, "	2 88	3 05	4 00	5 00	6 40		8 00	9 00
Letters and Figures, each	45	48	70	90	1 00		1 25	1 50

STEEL STAMPS.

Made to order at prices for each letter or figure as above, with cost of forging added.

SCREW DRIVERS.

BEST CAST BLADES.

Fig. 1439.

Size, inch	1½	2	3	4	5	6	7	8	10	12
Per dozen	$1 00	1 50	2 00	2 50	3 00	3 50	4 00	4 75	6 00	7 50

DROP FORGED FROM BEST CAST STEEL. WITH ROSEWOOD HANDLES.

Fig. 1440.

No. 1, 1/8 × 4 inch, per dozen	$4 00
" 2, 1/4 × 4 " "	4 00
" 3, 5-16 × 4 inch, "	4 50
" 4, 3/8 × 4 " "	4 50

POCKET SCREW DRIVER.

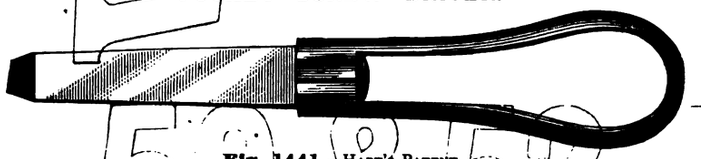


Fig. 1441.—Hart's Patent.

Per dozen $4 00

SCREW DRIVER BITS.

Fig. 1442.

Per dozen $2 00

PLANING MACHINE KNIVES.

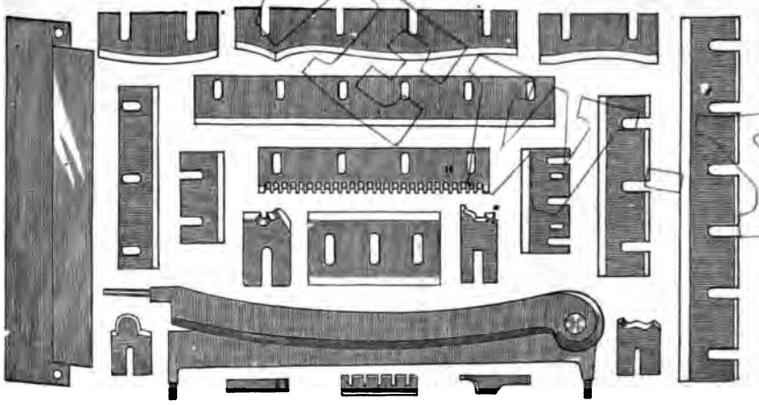


Fig. 1443.

Directions for ordering Planer Cutters. Place the knife face down upon paper; mark around to give the length, width, and position of the slots; then turn the knife upon the end, mark around to give the thickness and bevel.

Per inch ..... 14 cts.

SCALING PICKS.

Fig. 1444.

For removing scales from boilers.

Per dozen $7 20

POCKET LEVELS.

IMPROVED PATTERNS.

Fig. 1445.

Cast Iron Top Plate, Japanned, 1 dozen in a box, per dozen	$2 50
Brass " " 1 dozen in a box, per dozen	13 00
All Brass, 1 dozen in a box, per dozen	8 00

IRON POCKET LEVEL.

Fig. 1446.

Length, inch	2½	3	5	8
Japanned, per dozen	$2 50	3 00	4 00	8 00
Finished, "	9 00	12 00	15 00	18 00

LEVEL AND PLUMB GLASSES.

Size, inch	1⅛	1½	1¼	2	2½	3	3½	4
Per gross	$13 00	14 00	15 00	16 00	17 00	18 00	19 00	20 00

LEVELS.

Fig. 1447.

Level, 12 to 15 inch	$10 00
Plumb and Level, 24 to 30 inch	18 00
" " " 15 to 20 "	21 00
" " " 26 to 30 "	30 00
" " " 26 to 30 "	48 00
" " " 26 to 30 "	54 00
" " " 36 "	39 00
Double Plumb and Level, 36 inch	45 00
" " " 36 "	72 00
" " " 42 "	63 00

ADJUSTABLE LEVELS, PLUMBS, AND INCLINOMETERS.

Fig. 1448.

Fig. 1449.

Fig. 1450.

Size, inch	6	12	18	24	30
Iron Levels, per dozen	$30 00	48 00	60 00	66 00	
Mahogany Levels, per dozen		36 00	42 00	48 00	60 00

ADJUSTABLE PLUMB AND LEVEL.

Fig. 1451.

15 to 20 inches	Mahogany,	$39 00	Rosewood,	$72 00
26 to 30 "	"	60 00	"	114 00
Double Plumb, 26 to 30 inches	"	69 00	"	130 00
Inclinometer Combined, 24 to 30 inches	"	120 00	"	162 00

SAMPLE

MEASURING TAPES.

CHESTERMAN'S STEEL AND METALLIC.

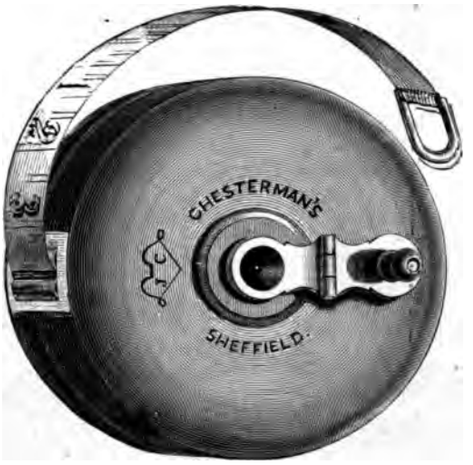


Fig. 1452.

Fig. 1453.

No. 34L—METALLIC OR WIRE WOVEN TAPES.

In leather case, divided either in 10ths or 12ths.

Length, feet	24	25	33	40
Each	$3 00	3 15	3 60	3 90
Length, feet	50	66	75	100
Each	$4 50	5 00	5 75	7 00

METALLIC TAPES.

Without case. Tapes same as No. 34L.

Length, feet	25	33	50	66	75	100
Each	$1 50	1 90	2 60	3 00	3 50	5 00

No. 38L.—STEEL TAPES.

Leather case, flush handle, divided either in 10ths or 12ths.

Length, feet	24	25	33	40	50	66	75	100
Each	$7 60	7 80	9 70	11 00	13 00	17 00	19 50	25 00

No. 37.—STEEL TAPES.

German silver case, wind up flush handle.

Length, feet	10	12	15	20
Each	$5 10	6 00	7 70	9 50

No. 36SS.—STEEL TAPES.

German silver case, with spring stop, divided in 16ths to the inch, or 16ths on one side and metres on the other.

Length, feet	3	5	6	9	10	12
Per dozen	$25 70	32 50	37 50	49 00	58 50	66 00

Fig. 1454.

Fig. 1455.

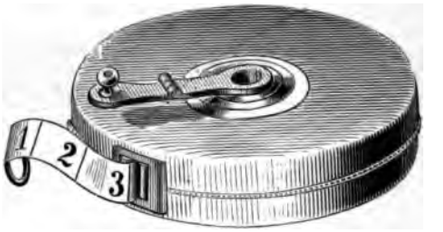


Fig. 1456.

PATENT LEATHER CASE, FOLDING HANDLE.

PER DOZEN.

Length, feet	25	30	40	50	66	75	80	100
Common ½ inch Cotton Tape	$5 75	6 00	6 75	7 25	7 75	8 25	10 25	11 75
Medium ½ inch Holland "	6 00	6 50	8 00	9 00	10 00	11 00	11 50	13 50
Fine Stitched ½ inch Super Corded Linen Tape		8 00	9 25	11 00	13 00	14 00		16 00
" " 9-16 " " " " "				14 00	15 00	16 00		18 00
Surveyors' ⅝ inch Super Heavy Holland Tape				15 00	16 00	17 00		19 00

RUSSET LEATHER CASE, FOLDING HANDLE.

Length, feet	50	66	75	100
Surveyors' ⅝ inch Holland Tape	$17 00	18 00	19 00	20 00
" Extra Fine Stitched ⅝ inch Corded Water-proof Linen Tape	19 00	21 00	23 00	25 00

BEND LEATHER CASE.

Length, feet	25	33	40	50	66	75	100
Surveyors' Super Heavy Corded Tape				17 00	18 00	19 00	21 00
Surveyors' Patent Wire Warp Tape	$25 00	29 00	31 00	37 00	43 00	49 00	55 00

FILES.

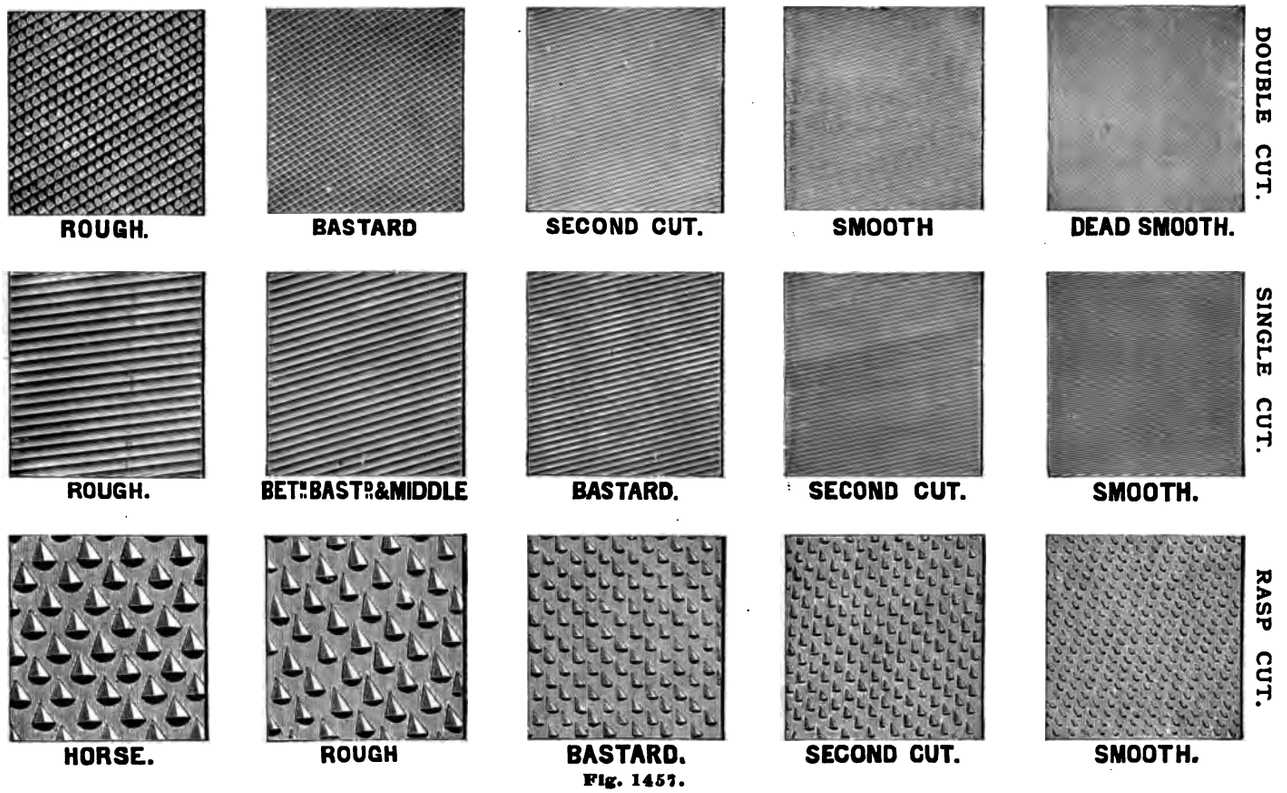


Fig. 1457.

FILES AND RASPS.

$10 in £ Sterling.

	Size, inch	1, 4	4½	5	5½	6	7	8	9	10	11	12	13	14	15	16	17	18
Rough and Bast'd Cut	Flat, Square, Round, Half Round, and Mill Saw,	$2 38	2 62	2 88	3 12	3 50	4 26	5 26	6 00	7 50	9 00	10 76	12 50	15 00	18 00	21 50	25 00	30 00
	Hand, Warding, and Three Square	2 62	2 88	3 12	3 50	4 26	5 26	6 00	7 50	9 00	10 76	12 50	15 00	18 00	21 50	25 00	30 00	34 00
	Knife	4 26	4 76	5 26	5 50	6 00	7 50	9 00	10 76	12 50								
	Cross and Equaling	3 12	2 50	3 74	4 26	4 76	5 50	6 74	8 26	10 00	11 50	13 50	16 50	19 50	23 00	27 50	32 00	37 00
Second Cut.	Flat, Square, Round, Half Round, and Mill Saw,	2 76	3 00	3 38	3 76	4 12	4 88	6 00	6 76	8 50	10 00	12 00	13 50	16 50	19 50	23 50	27 50	32 50
	Hand, Warding, and Three Square	3 00	3 38	3 76	4 12	4 88	6 00	6 76	8 50	10 00	12 00	13 50	16 50	19 50	23 50	27 50	32 50	37 50
	Knife	4 88	5 38	6 00	6 38	6 76	8 50	10 00	12 00	13 50								
	Cross and Equaling	3 76	4 12	4 38	4 88	5 38	6 38	7 62	9 26	11 00	12 74	15 00	18 00	21 50	25 50	30 00	35 00	41 00
Smooth Cut.	Flat, Square, Round, Half Round, and Mill Saw,	3 38	3 76	4 12	4 50	4 76	5 76	6 76	7 76	9 50	11 50	13 26	15 00	18 00	21 00	26 00	31 50	37 00
	Hand, Warding, and Three Square	3 76	4 12	4 50	4 76	5 76	6 76	7 76	9 50	11 50	13 26	15 00	18 00	21 00	26 00	31 50	37 00	42 00
	Knife (Gin Saw)	5 76	6 12	6 76	7 26	7 76	9 50	11 50	13 26	15 00								
	Cross and Equaling	4 50	4 76	5 26	5 76	6 12	7 26	8 50	10 26	12 50	14 00	16 50	19 50	24 00	29 00	33 50	39 50	44 50

RASPS.

Size, inch	6	7	8	9	10	11	12	13	14	15	16
Horse Rasps, Half File, and Shoe Rasps	$3 50	4 26	5 26	6 00	7 50	9 00	10 76	12 50	15 00	18 00	21 50
Wood " Flat and Half Round											
Horse " Beveled					8 50	10 00	11 76	13 50	16 00	19 00	22 50
" " Tanged					10 76	12 50	15 00	18 00	21 50	25 00	30 00
Cabinet Files, Flat and Half Round	4 76	5 76	6 76	7 76	9 50	11 50	13 26	15 00	18 00		

SAW FILES.

Size, inch	1, 3½	4	4½	5	5½	6	6½	7	7½	8	8½	9	10	11	12
Tapers, Second Cut, Single	$2 00	2 26	2 50	2 76	3 26	3 76	4 26	4 76	5 26	6 00	6 76	7 76	9 76	12 00	14 50
Pit Saw, " "	2 38	2 62	2 88	3 26	3 76	4 26	4 76	5 26	6 00	6 76	7 26	8 00	10 00	12 50	15 00
Cant (Gin Saw)	3 76	3 76	4 12	4 38	4 88	5 38									

STUBS' FILES.

HALF ROUND AND ROUND EDGE JOINT OR DRILL FILES.			
Size, in.	Bastard.	Smooth.	Super.
1 to 3	$2 10	$2 40	$2 30
3½	2 40	2 95	3 60
4	3 00	3 30	4 20
4½	3 30	3 75	4 80
5	3 60	4 20	5 40
6	4 80	5 40	6 60
7	5 40	6 60	8 40
8	6 00	7 20	9 60
9	7 20	9 00	12 00
10	9 00	10 80	13 20
12	12 00	14 40	18 00

HAND, KNIFE, AND PILLAR FILES.			
Size, in.	Bastard.	Smooth.	Super.
1 to 3½	$1 95	$2 25	$3 30
4	2 10	2 70	3 95
4½	2 55	3 30	4 50
5	2 70	3 60	4 80
6	3 90	4 80	6 00
7	4 80	6 00	7 20
8	6 00	7 20	9 00
9	7 20	8 40	10 80
10	8 40	9 60	12 00
12	10 80	13 20	16 80

TAPER THREE SQUARE FILES.			
Size, in.	Bastard.	Smooth.	Super.
1 to 3	$1 65	$2 10	$2 40
3½	1 80	2 40	2 95
4	2 10	2 70	3 30
4½	2 30	3 00	3 90
5	2 70	3 60	4 50
6	3 30	4 20	5 20
7	4 20	5 40	7 20
8	6 00	7 20	8 40
9	7 20	8 40	10 80
10	8 40	9 60	12 00

SQUARE AND TAPER FLAT FILES.			
Size, in.	Bastard.	Smooth.	Super.
1 to 3	$1 95	$2 10	$3 00
3½	1 95	2 40	3 30
4	2 10	2 70	3 90
4½	2 65	3 30	4 50
5	2 70	3 60	4 80
6	3 90	4 80	6 00
7	4 80	6 00	7 20
8	5 40	6 60	8 40
9	6 60	7 85	9 60
10	7 85	9 60	10 80

ROUND FILES.			
Size, in.	Bastard.	Smooth.	Super.
1 to 3	$1 80	$2 40	$3 30
3½	1 95	2 70	3 60
4	2 10	3 00	4 20
4½	2 40	3 30	4 80
5	2 70	3 60	5 40
6	3 30	4 80	7 20
7	4 20	6 00	9 00
8	6 00	7 20	9 60
9	7 20	9 00	12 00
10	7 85	10 80	13 20

EQUALING FILES.			
Size, in.	Bastard.	Smooth.	Super.
1 to 3½	$2 10	$2 46	$3 30
4	2 40	2 70	3 90
4½	2 70	3 30	4 50
5	3 00	3 60	4 80
6	3 60	4 80	6 00
7	4 20	5 40	7 20
8	5 40	7 20	9 00
9	6 60	8 40	10 80
10	8 40	9 60	12 00
12	10 80	13 20	16 80

CROSSING FILES.			
Size, in.	Bastard.	Smooth.	Super.
1 to 3	$2 70	$3 00	$3 60
3½	3 00	3 30	4 20
4	3 30	3 60	4 80
4½	3 60	4 20	5 40
5	3 90	4 80	6 00
6	5 40	6 00	7 20
7	6 60	7 85	9 60
8	7 20	8 40	10 80
9	8 40	10 20	13 20
10	9 60	12 00	14 40

WARDING FILES.			SLITTING FILES.	
Inch.	Bastard.	Smooth.	Inch.	Bastard.
1 to 3½	$1 80	$2 10	2	$2 10
4	2 10	2 55	2½	2 70
4½	2 25	3 00	3	3 00
5	2 40	3 30	3½	3 30
6	3 60	4 50	4	3 60
7	4 50	5 40	4½	3 90
			5	4 20
			6	5 40

SAW FILES, TAPER OR BLUNT, SINGLE OR DOUBLE CUT.

Size, inch	1 to 3	3½	4	4½	5	5½	6	7	8	9	10
Per dozen	$1 80	1 95	2 25	2 55	3 00	3 30	3 60	4 95	6 30	7 20	8 50

LIST FOR RECUTTING FILES.

Size, inch	1 to 4½	5	5½	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Bastard	$0 94	1 12	1 25	1 37	1 50	1 87	2 25	2 62	3 00	3 37	3 75	4 50	5 25	6 00	7 12	8 25	9 55	10 50
Second Cut	1 12	1 37	1 68	1 87	2 25	2 50	2 62	3 00	3 37	3 75	4 50	5 25	6 00	7 12	8 25	9 55	10 50	12 00
Smooth	1 50	1 87	2 25	2 50	2 62	3 00	3 37	3 75	4 50	5 25	6 00	7 12	8 25	9 55	10 50	12 00	13 50	15 37

Hand, Round, and Half Round Files, advance one inch.

FILE CARDS.

For cleaning files, in lengths of 6 inches, per dozen $9 00

ROTTEN STONE.

Soft English, per pound ..... cts.

PUMICE STONE.

Selected, per pound ..... cts. Powdered, per pound ..... cts.

GUM SHELLAC.

For pattern makers, per pound ..... cts.

GROUND GLASS.

For grinding valves, per pound ..... cts.

DRY RED LEAD.

Per pound ..... cts.

PLUMBAGO.

Put up in 5 and 10 pound packages, X and XX, per lb. ..... 25 and 40 cts.

BORAX.

By the quantity, in barrels or boxes, per pound ..... cts.

ARKANSAS OIL STONES AND SLIPS.

WASHITA, mounted in Wooden Case ..... 6 inch, $1 50 8 inch, $2 00
ARKANSAS, " " " ..... 6 " 2 50 8 " 3 25
ARKANSAS OIL STONES, various sizes, from ⅛ to 2 lbs., per pound $2 00
WASHITA " " about 1½ pounds each, per pound 50
SQUARE ARKANSAS SLIPS, each ..... 40 to 60
KNIFE EDGE SLIPS, each 50
TRIANGULAR " " 50
PENCIL POINTS, each 38
ROUND EDGE SLIPS, each ..... 50 to 75

SCOTCH HONE, or Water of Ayr Stone.

For polishing, in square pieces about 6 inches long.

Size, inch square	⅛	¼	¾	1
Each	$0 20	25	30	35

GRINDSTONES.

All sizes.
Berea, per pound ..... cts.
Ohio, " ..... "
New Castle, per pound ..... "

EMERY.

We keep in stock a full assortment of the following brands and numbers: CHESTER, WASHINGTON MILLS, WELLINGTON MILLS; Nos. 6, 8, 10, 12, 14, 16, 20, 24, 30, 36, 46, 54, 60, 70, 80, 90, 100, 120, 150, Flour, and Crocus.

Put up in kegs of about 200 lbs.—Flour, regular numbers, per lb., Chester ..... 8 cts.
" " 200 " — " " " Washington ..... 10 "
" " 200 " — " " " Wellington ..... 12 "
" packages of 10 " —Chester ..... "
" " 10 " —Washington ..... "
" " 10 " —Wellington ..... "

EMERY PAPER.

Emery Paper, No. 00 to 1½ and assorted, per ream $6 50
" " " 2, per ream 7 50
" " " 2½ " 9 50
" " " 3 " 11 50

EMERY CLOTH.

All numbers 20 00
American Standard Numbers ..... 00 0 100 ½ 1 1½ 2 2½ 3
English Emery ..... Flour 120 100 90 80 70 60 54 46

FLINT PAPER.

Nos. 00 to 1½ and assorted, per ream $4 25
" 2, 2½, and 3, per ream 4 75

Extra, in 50 yard rolls, width, 23½ inches.

No. 00 to 1½, per yard ..... 9 cts.
" 2, per yard ..... 10 "
" 2½ " ..... 11 "
" 3 " ..... 12 "

STAR PAPER.

All numbers, per ream $3 25

SHAPES OF EMERY WHEELS FOR GRINDING MOLDING CUTTERS, BITS, KNIVES, TOOLS AND SAWS.

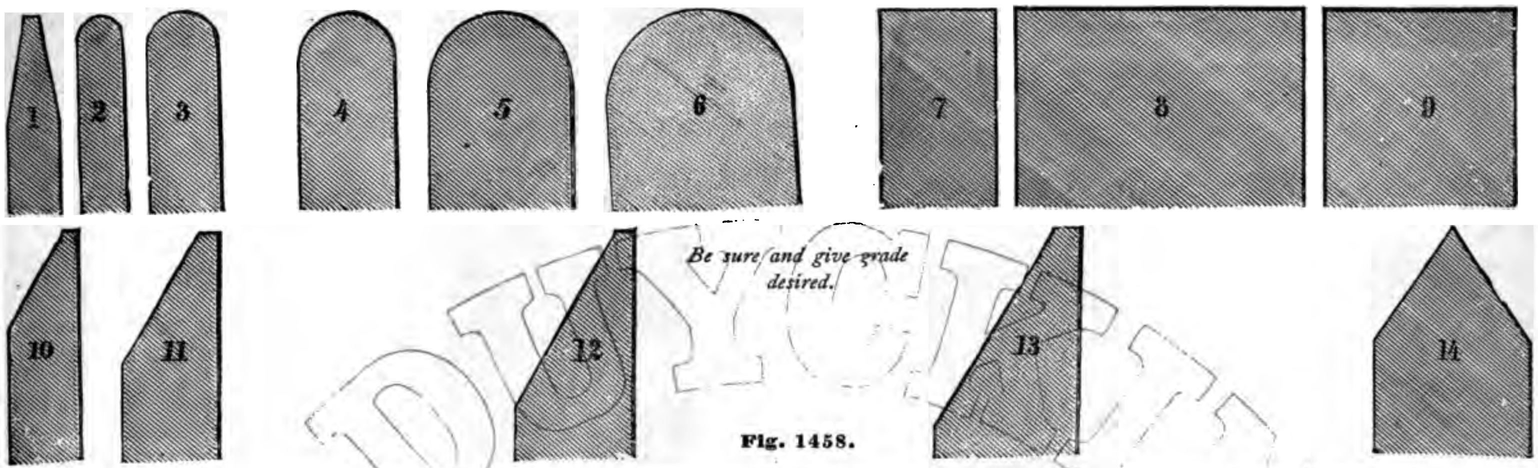


Fig. 1458.

Diameter, Inches.	¼	½	¾	1	1¼	1½	1¾	2	2½	3	3½	4	5	6	7	8	9	10	11	12	No. of Revolut'ns per min.
	THICKNESS IN INCHES.																				
1	$0 10	$0 15	$0 20	$0 25	$0 30	$0 35	$0 40	$0 45	$0 50	$0 55	$0 60	$0 65									5,000
1½	0 15	0 20	0 25	0 30	0 35	0 40	0 45	0 50	0 55	0 60	0 65	0 70									5,000
2	0 20	0 25	0 30	0 35	0 40	0 50	0 60	0 70	0 80	0 90	1 00	1 10									5,000
2½	0 30	0 40	0 50	0 60	0 70	0 80	0 90	1 00	1 10	1 20	1 30	1 40									5,000
3	0 45	0 60	0 75	0 90	1 05	1 20	1 30	1 40	1 50	1 60	1 70	1 80									4,800
3½	0 60	0 75	0 90	1 05	1 20	1 35	1 50	1 65	1 95	2 25	2 55	2 85									4,100
4	0 70	0 90	1 10	1 25	1 40	1 60	1 75	2 00	2 25	2 50	2 75	3 00									3,600
5	1 15	1 15	1 45	1 75	2 05	2 35	2 65	2 95	3 55	4 15	4 75	5 35	$6 55								3,000
6	1 50	1 50	1 90	2 30	2 70	3 10	3 50	3 90	4 70	5 50	6 30	7 00	8 40								2,400
6½	1 75	1 75	2 25	2 75	3 25	3 75	4 25	4 75	5 75	6 75	7 75	8 75	10 75	$12 75							2,250
7½	2 00	2 00	2 60	3 20	3 80	4 40	5 00	5 60	6 80	8 00	9 20	10 40	12 80	15 20							2,000
8	2 25	2 25	2 95	3 65	4 35	5 05	5 75	6 45	7 85	9 25	10 65	11 05	13 85	16 65							1,800
8½	2 50	2 50	3 25	4 00	4 75	5 50	6 25	7 00	8 50	10 00	11 50	13 00	16 00	19 00	$22 00						1,700
9½		3 00	3 85	4 70	5 55	6 40	7 25	9 10	10 80	12 50	14 20	15 90	19 30	22 70	26 10						1,575
10½		3 50	4 50	5 50	6 50	7 50	8 50	9 50	11 50	13 50	15 50	17 50	21 50	25 50	29 50						1,500
12		4 00	5 25	6 50	7 75	9 00	10 25	11 50	14 00	16 50	19 00	21 50	26 00	30 00	34 00	$38 00	$42 00				1,200
14			8 00	8 00	9 50	11 00	12 50	14 00	17 00	20 00	23 00	26 00	32 00	38 00	44 00	50 00	56 00				1,050
16			10 00	10 00	11 75	13 50	15 25	17 00	20 50	24 00	27 50	31 00	38 00	45 00	52 00	59 00	66 00				900
18				16 00	16 00	18 00	20 00	22 00	26 00	30 00	34 00	38 00	46 00	54 00	62 00	70 00	78 00	$86 00			825
20				20 00	20 50	23 00	25 50	28 00	33 00	38 00	43 00	48 00	58 00	68 00	78 00	88 00	98 00	108 00			750
22						29 00	32 00	35 00	41 00	47 00	53 00	59 00	71 00	83 00	95 00	107 00	119 00	131 00			675
24						36 00	39 50	43 00	50 00	57 00	64 00	71 00	83 00	95 00	107 00	119 00	131 00	143 00	$155 00	$167 00	600
26						44 00	48 00	52 00	60 00	68 00	76 00	84 00	98 00	112 00	126 00	140 00	154 00	168 00	182 00	196 00	550
30								68 00	75 00	85 00	95 00	105 00	120 00	140 00	160 00	180 00	200 00	220 00	240 00	260 00	500
36								100 00	110 00	120 00	130 00	140 00	160 00	180 00	200 00	220 00	240 00	260 00	280 00	300 00	400
42								130 00	140 00	150 00	165 00	180 00	210 00	240 00	260 00	280 00	300 00	320 00	340 00	360 00	340
48								150 00	160 00	170 00	180 00	195 00	225 00	255 00	285 00	305 00	335 00	385 00	415 00	445 00	300

VULCANITE EMERY WHEELS.

THICKNESS IN INCHES.

Dia. In.	¼	½	1	1½	2	2½	3	3½	4
1½	$0 30	$0 40	$0 50	$0 60	$0 70	$0 85	$1 00	$1 12	$1 25
2	0 37	0 50	0 60	0 75	0 90	1 05	1 25	1 45	1 65
2½	0 52	0 70	0 85	1 00	1 25	1 55	1 85	2 10	2 35
3	0 63	0 85	1 15	1 40	1 65	2 00	2 40	2 80	3 20
3½	0 75	1 00	1 40	1 80	2 20	2 70	3 20	3 70	4 20
4	0 82	1 10	1 65	2 20	2 80	3 40	4 00	4 70	5 30
5	1 05	1 40	2 10	3 00	3 85	4 80	5 70	6 70	7 70
6	1 30	1 75	3 10	4 50	5 60	7 00	8 40	9 80	11 20
6½	1 57	2 10	3 50	4 90	6 30	7 85	9 40	11 00	12 50
7½	1 84	2 45	4 20	6 00	7 75	9 60	11 50	13 50	15 50
8	1 96	2 62	4 50	6 50	8 50	10 50	12 50	14 75	16 75
8½	2 10	2 80	4 90	7 00	9 00	11 50	13 50	16 00	18 00
9½	2 62	3 50	6 30	8 75	11 20	14 00	16 80	19 60	22 40
10½	2 88	3 85	7 00	9 80	12 50	15 75	19 00	22 00	25 00
12	3 00	4 00	7 50	11 00	14 00	17 50	21 00	24 50	28 00
14	4 70	6 25	11 25	15 50	19 50	24 50	29 50	34 00	39 00
16	6 00	8 00	14 00	19 50	25 00	31 50	37 50	44 00	50 00
18	7 00	9 50	18 00	25 00	32 00	40 00	48 00	56 00	64 00
20	8 00	11 00	21 00	29 00	39 00	49 00	58 00	68 00	78 00
22	10 00	13 00	24 00	35 80	47 00	59 00	70 00	82 00	94 00
24	11 00	15 00	29 00	42 00	56 00	70 00	84 00	98 00	112 00
26	13 00	17 00	33 00	49 00	65 00	82 00	98 00	114 00	130 00
30	17 00	23 00	45 00	66 00	87 00	109 00	131 00	153 00	175 00
36	25 00	33 00	64 00	94 00	125 00	156 00	188 00	219 00	250 00

Any particular make of wheel furnished.

DIAMOND TOOLS.

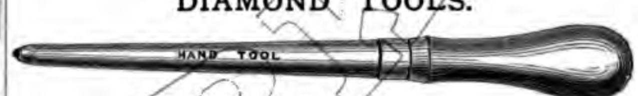


Fig. 1459.

Fig. 1460.

For Emery Wheels, per doz $15 00
For Grindstones, per doz.......................... 20 00

EMERY WHEEL DRESSER.

Fig. 1461.

For Turning, Truing, Shaping, Sharpening and Taking the Glazing off Emery Wheels and Saw Gummers.

Each.. $

EMERY GRINDERS.

Fig. 1462.

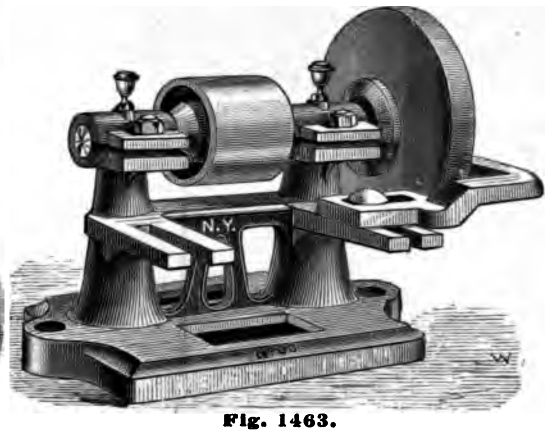


Fig. 1463.

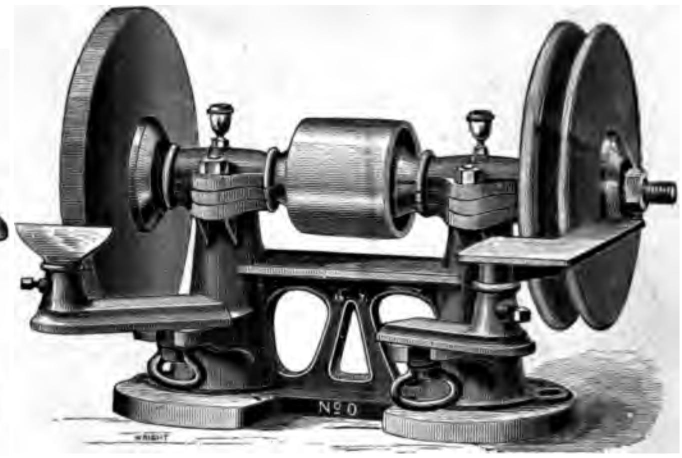


Fig. 1464.

EMERY GRINDERS.

No.						Each.
000	Grinder, has no Countershaft				....	$5 00
00	"	"	"	"	....	11 50
0	"	without	"	"	....	18 50
0	"	with	"	"	....	29 00
0	"	"	"	"	and stand,	54 00
1	"	without	"	"	....	28 00
1	"	with	"	"	....	41 50

No.						Each.
1	Grinder, with Countershaft and stand,					66 50
2	"	without	"	"	....	43 50
2	"	with	"	"	....	60 00
2	"	"	"	"	and base,	80 00
3	"	without	"	"	....	96 00
3	"	with	"	"	....	115 00
4	"	without	"	"	....	150 00
4	"	with	"	"	....	175 00

The above prices do not include wheels.

COUNTERSHAFTS ALONE.

No.				Each.
00	Countershaft		....	$10 50
0	"	"	....	10 50
1	"	"	....	13 50
2	"	"	....	16 50
3	"	"	....	18 50
4	"	"	....	25 00

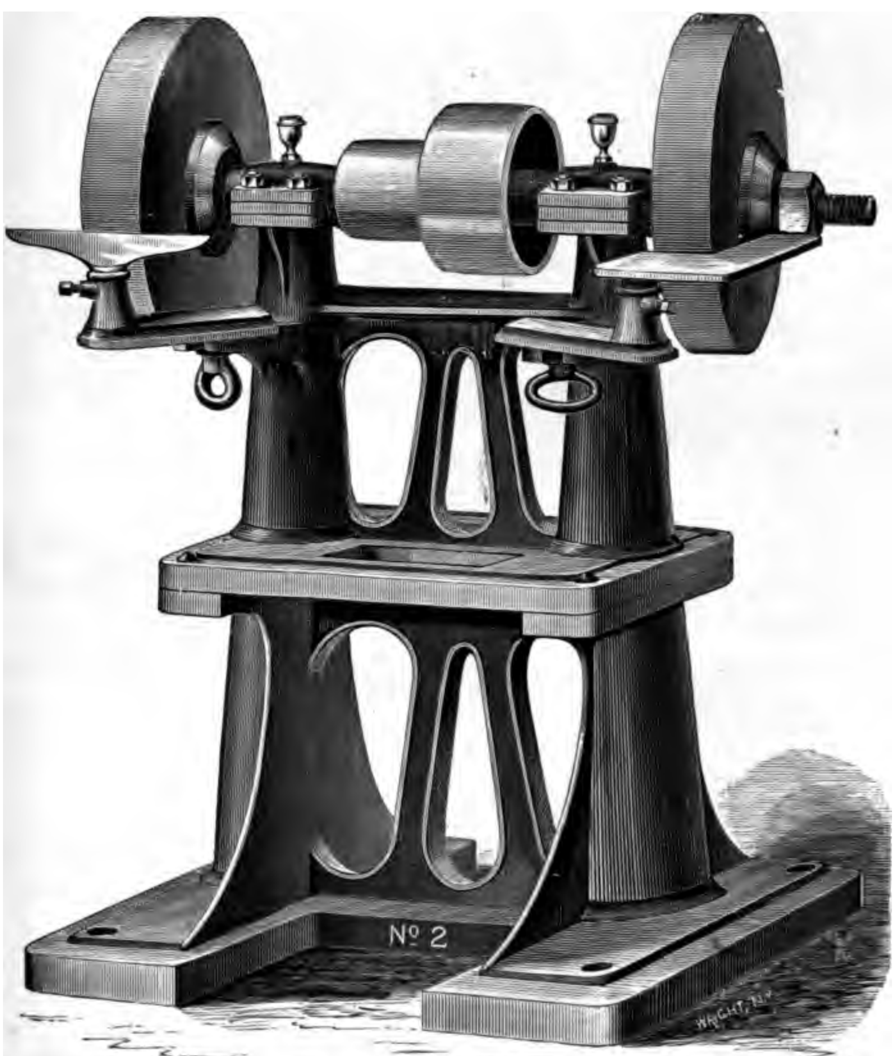


Fig. 1465.

No. 000 Emery Grinder has Steel Arbor for wheels with hole. This machine runs one wheel up to 6 inches diameter, 1 inch face, has no Rests. Is a very desirable machine for Jewelers, Dentists, Engravers, Model Makers, etc., etc. One of these machines should set near every drill lathe, for grinding *Twist Drills*, Reamers, Taps, Dies, etc., etc. It can be run by either round or flat belts. The only machine of its kind in the market.

No. 00 Emery Grinder has $1\frac{1}{8}$ inch Steel Arbor for wheels with $\frac{3}{4}$ inch mandrel hole. This machine runs only one wheel, has one adjustable Rest, can be belted from above or below, and is every way first-class. It runs wheels 12 inch diameter up to 2 inch face. It is suitable for light work, such as Saw Gumming, Lathe Tools, Fluted Reamers, Taps, Drills, etc., etc.

No. 0 Emery Grinder has $1\frac{1}{8}$ inch Steel Arbor for wheels with $\frac{3}{4}$ inch mandrel hole. This machine can be belted from above or below. Has complete set of Rests and will run two wheels 12 inch diameter, up to 2 inch face. A low price machine for small work in general, such as grinding Lathe Tools, Twist Drills, Reamers, Taps, etc., etc. Will run on a bench or will fit on stand.

No. 1 Emery Grinder has a Steel Arbor 1 3-16 inches diameter for wheels with 1 inch hole. Cone pulley, for two speeds, a set of adjustable rests, and can be belted up or down. This is a well built machine, made expressly for small machine shops. We recommend our customers to order one coarse and one fine wheel, representing different grades of files. This is also a valuable, machine for trimming small Castings of iron or brass, grinding Twist Drills, Hardened Tools, Dies, etc., etc. Runs wheels 10, 12, and 14 inches diameter, up to 2 and $2\frac{1}{2}$ inches thick.

No. 2 Emery Grinder has 1 5-16 inch Steel Arbor for wheels with $1\frac{1}{4}$ inch mandrel hole. This machine can be belted from above or below, and will run two wheels 20 inches diameter, from 1 to $2\frac{1}{2}$ inch face. Has Cone Pulley, complete set of Rests, arms front and rear, and is every way complete. It is constructed to set on a bench or on its pedestal, as shown in cut.

No. 3 Emery Grinder has $1\frac{5}{8}$ inch Steel Arbor for wheels with $1\frac{1}{2}$ inch mandrel hole. This machine can be belted from above or below. Has Cone Pulley, and will run two 30 inch wheels, from one to 4 inch face. It is a very heavy machine, suitable for heavy work. Every foundry and large machine shop should have one.

No. 4 Emery Grinder has Steel Arbor $2\frac{3}{4}$ inches diameter, for wheels with $2\frac{1}{2}$ inch hole. Will run wheels 24, 36, 40, 44, and 48 inches diameter up to 3, 4, and 5 inches thick. Is suitable for work of the heaviest description—such as for squaring up iron columns, lintels, cornices, sills and work for iron fronts of buildings—also for heavy iron bridge work, railroad shops, rolling mills, etc., etc. The wheels on this machine are so far apart as not to interfere with grinding large pieces on both wheels at once. For heavy work we consider large wheels the most economical, as they present a larger extent of grinding surfaces, both on the sides and faces of the wheels.

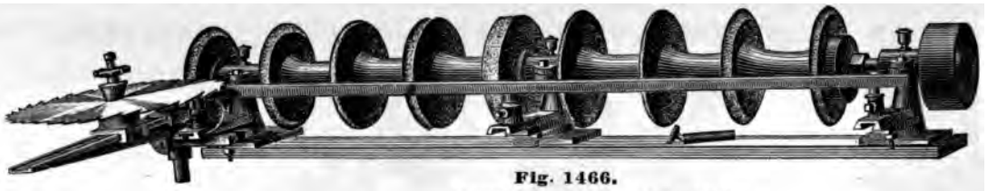


Fig. 1466.

NINE WHEEL GRINDER.

This shows a Grinder for mounting a number of wheels upon the same arbor. It is intended to be bolted to a bench. Is 5½ feet long, takes wheels 8½ inches diameter.

Including 9 Emery wheels, $60 00 Boxing..... $1 00 Saw Gumming Attachment, $10 00
Same style, to take 5 wheels, $40 00 Boxing $0 50

SAW SHARPENER AND GUMMING MACHINE.

(Fig. 1468.)

For the accurate grinding of saw teeth, so that each one is uniform in shape and beveled at the best angle for cutting. The arbor which holds the saw is so arranged, that any position or angle can be obtained for getting the required bevel, and it will accommodate any size saw, large or small, or any shape tooth desired. The Emery Wheel is suspended on a swinging frame, and is held away from the saw by means of a coil spring. The operator gently presses the Emery Wheel against the saw with one hand and turns the saw on the arbor with the other. The slightest touch can be given to the saw tooth without injury. An extra wheel can be used on the same machine for molding cutters, etc., which is not shown in the cut.

Without attachment for straight saws.....$75 00 With attachment for straight saws, extra....$25 00

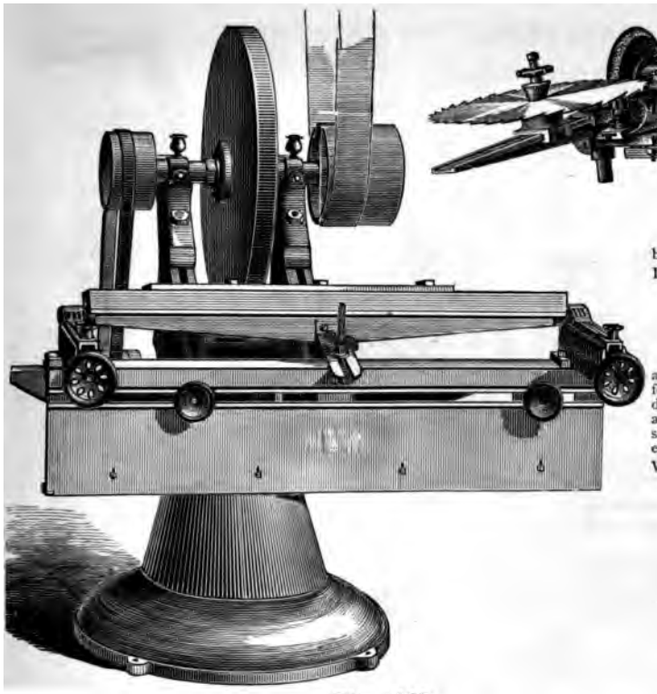


Fig. 1467.

PATENTED AND IMPROVED AUTOMATIC KNIFE GRINDER, FOR ALL KINDS OF LONG KNIVES.

With patent sliding boxes, so that the wheel can be entirely used up. The grinding wheel in each is 26 inches in diameter. Speed for Emery Wheel, 230 revolutions per minute. The price includes the wheel.

For Knives to 36 inches long ..... $100 00 For Knives to 80 inches long... ..... $180 00
" " 50 " " .... 150 00 Boxing working parts.....from $2 00 to 5 00

COTTON ENDLESS POLISHING STRAPPING BELTS.

These belts are endless, with selvedge edges, are smooth, very flexible, and designed to take the place of ticking belts. They are in widths of ⅜, ½, ⅝, ¾, ⅞, 1, 1¼, 1½, and 2 inches. In 12 foot lengths, of all the different widths.

CANVAS ENDLESS POLISHING BELTS.

They are made in widths of 2 inches up to 36—in any lengths.

TRAUT'S ENDLESS RUBBER POLISHING BELTS.

Per foot in length, for each inch in width, 2 ply..... ..... $0 15
" " " " " " 3 " 25
" " " for every additional ply ....advance 10

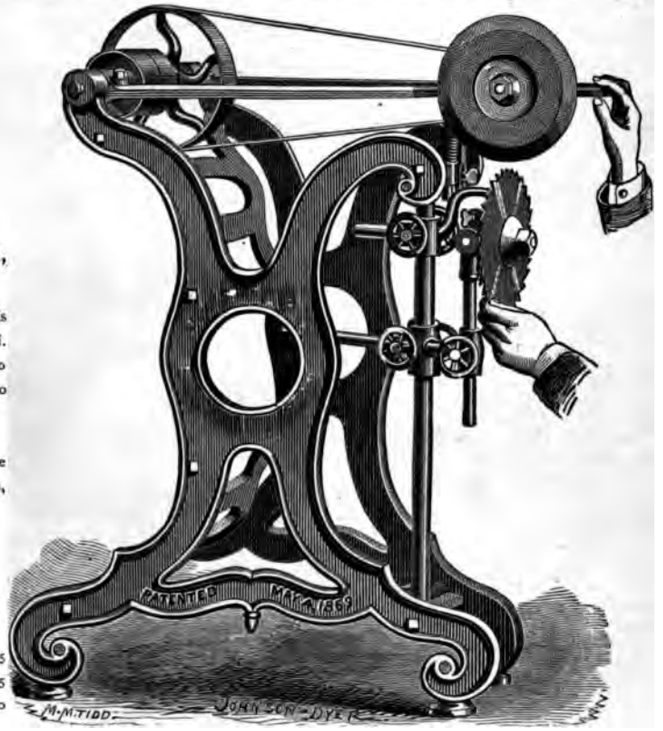


Fig. 1468.

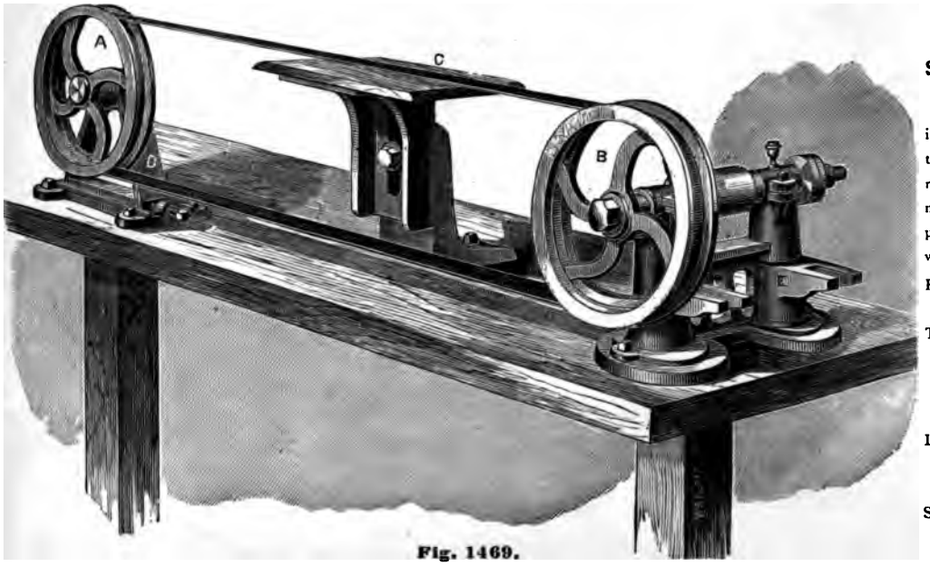


Fig. 1469.

STRAPPING AND BELTING MACHINE.

(Fig. 1469.)

The engraving shows at a glance how Traut's Endless Polishing Belt can be used when a flat surface is desired—as the small table between the pulleys keeps the belt in a level position while running, and prevents it from sagging. The centre table should be made long or wide, to suit the kind of work being finished. When polishing round surfaces, such as brass faucets, shovel handles, wagon spokes, etc., the centre table can be removed.

Belting Attachment (consisting of 2 Flanged Pulleys and Adjustable Standard only) for belts 2 inches wide..... $15 00
The same, with pulleys for belts 3 inches wide.... . ..... 18 00
" " " " " 4 " " 20 00
" " " " " 5 " " 25 00

These pulleys fit on either a No. 0 or No. 1 Grinder.

Double Belting Machine of 4 Pulleys, suitable for hardware manufacturers, etc., built in a substantial manner, on a strong hard wood frame, Belts extra.....$125 00

Single Belting Machine of 2 Pulleys, on hard wood frame, Belts extra.... ... . 85 00

MORSE'S PATENT TWIST DRILL GRINDING MACHINE.

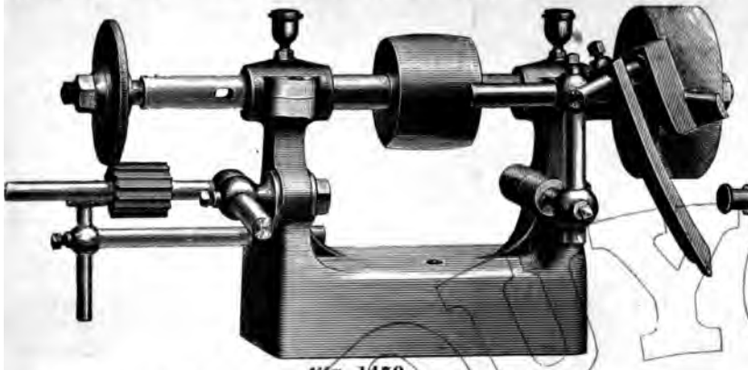


Fig. 1470.

No. 1—For sizes to ⅛ inch, including Emery Wheel..... $11 00
" 2— " ⅛ to 2 " with 1 Emery Wheel, and without Mill Attachment..... 34 00
" 2— " ⅛ to 2 " " Mill Attachment and Emery Wheels..... 48 00

HEAVY GRINDSTONE HANGINGS.

With flange and nut.

Fig. 1471.

(Fig. 1471.)

Double rollers, bearing of shaft and rollers turned and polished, with flanges and screws cut on shaft, and a nut to screw up flanges to centre and hang stone without wedging, with a nut and screw on end of shaft, and with covers for the rollers.

No. 1—Shaft 18 inches, per dozen..... $16 00
" 2— " 20 " " 18 00
" 3— " 30 " " 22 00
" 4— " 18 " " 18 00
" 5— " 24 " " 22 00
" 6— " 30 " " 25 00
Friction Rollers and Stands for Nos. 1, 2, 3, and 4, per dozen set..... 6 00
Friction Rollers, per dozen set 2 75
Stands, per dozen..... 2 00
Cranks, " 4 00
Covers, " set..... 1 50
Handles, " " 2 00
Shafts, with Flanges, Nuts, and Handles, for Nos. 1, 2, and 3, per dozen set..... 11 00
Shafts, with Flanges, Nuts, and Handles, for Nos. 4, 5, and 6, per dozen set 14 00
Friction Rollers and Stands, for Nos. 4, 5, and 6, per dozen set..... 6 00

PATENT GRINDSTONE FRAMES.

(Fig. 1472.)

No. 1—To take a 30 × 4 inch Stone, with Tool Rest.. $33 00
" 2— " 36 × 6 " " " .. 45 00
" 3— " 48 × 8 " " " .. 85 00
" 4— " 60 × 16 " " " .. 130 00

EXTRA TOOL RESTS.

Nos. 1 and 2..... $4 00
" 3 and 4..... 5 00

SHIELD AND STAND TO HOLD KEG TO DRIP WATER ON THE STONE.

For No. 1 Frame..... $3 50
" 2 " 5 00
" 3 " 6 00
Water Cock, with Cross Drip 1 50
Attachment to hold Knife Grinding Machine..... 3 50
Knife Grinding Machine..... 16 00

Fig. 1472.

WOODEN FRAMED GRINDSTONES.

Pounds.....	50	60	70	80	90
Each.....	$6 20	6 50	6 80	7 10	7 40
Pounds.....	100	110	120	130	140
Each.....	$7 70	8 00	8 30	8 60	8 90

GRINDSTONE FRAMES.

Fig. 1473.

Not including Stone—Take Stone 4 ins. face, 30 ins. diam., ..$25 00
" " — " " 5 " 42 " .. 35 00
" " — " " 8 " 54 " .. 50 00

PATENT IMPROVED CAST IRON GRINDSTONE FRAME.

(Fig. 1474.)

With pulley for power—To swing stone 30 × 4½ inches..... $15 00
With pulley and treadle, for power and foot..... 16 00
With pulley for power—To swing stone 48 × 6 inches..... 50 00
With pulley and treadle, for power and foot—To swing stone 30 × 4½ inches, 12 00

Fig. 1474.

SET SCREWS.

PER 100.

Fig. 1475.—OVAL POINT SET SCREW.

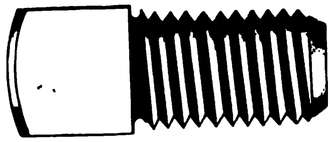


Fig. 1476.—CUP POINT SET SCREW.

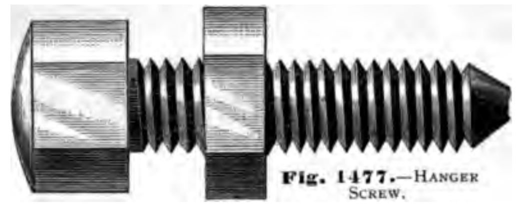


Fig. 1477.—HANGER SCREW.

Fig. 1478.

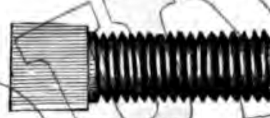


Fig. 1479.

Fig. 1480.—SQUARE HEAD CAP SCREW.

Fig. 1481.—HEXAGON HEAD CAP SCREW.

Fig. 1482.—COUNTERSUNK HEAD SCREW.

Fig. 1483.—BUTTON HEAD SCREW.

Fig. 1484.—ROUND HEAD CAP SCREW.

Fig. 1485.—STUD.

MILLED SET SCREWS.

(Figs. 1475 and 1476.)

CASE HARDENED IRON.

of threads to inch	18 20	16 18	16 14	14	12 13 14	12	10 11 12	10 11	9	8 9
meter of Screw, inch	¼	5-16	⅜	7-16	½	9-16	⅝	¾	⅞	1
inch long under head	$2 00	2 20	2 50	2 90	3 40					
" " "	2 15	2 35	2 65	3 10	3 60	4 25				
" " "	2 30	2 50	2 80	3 30	3 80	4 50	5 25			
" " "	2 45	2 65	2 95	3 50	4 00	4 75	5 50	7 50	10 45	13 34
" " "	2 60	2 80	3 10	3 70	4 20	5 00	5 75	8 00	11 00	14 40
" " "	2 75	2 95	3 25	3 90	4 40	5 25	6 00	8 50	11 55	15 50
" " "		3 10	3 40	4 10	4 60	5 50	6 25	9 00	12 10	16 60
" " "			3 55	4 30	4 80	5 75	6 50	9 50	12 70	17 70
" " "				4 50	5 00	6 00	6 75	10 00	13 30	18 80
" " "					5 20	6 25	7 00	10 50	13 90	19 10

Steel Set Screws, 50 per cent extra.

FORGED SET SCREWS AND TAP BOLTS.

(Figs. 1478 and 1479.)

meter, inch	¼	5-16	⅜	7-16	½	9-16	⅝	¾
inches long	$2 50	2 80	3 15	3 65	4 30	5 10	5 90	9 00
"	2 55	2 85	3 25	3 80	4 45	5 30	6 10	9 25
"	2 60	2 90	3 35	3 95	4 60	5 50	6 30	9 50
"	2 65	2 95	3 45	4 10	4 75	5 70	6 50	9 75
"	2 70	3 00	3 55	4 25	4 90	5 90	6 70	10 00
"	2 75	3 05	3 65	4 40	5 05	6 10	6 90	10 25
"	2 80	3 10	3 75	4 55	5 20	6 30	7 10	10 50

With Hexagon Heads, 10 per cent extra.

In ordering, please specify whether milled or forged, cup or oval points, steel or case lened, and number of threads to inch.

STUDS.

U. S. STANDARD THREAD.

(Fig. 1485.)

of threads to inch	16 14	14	12 13 14	12	10 11	10	9
neter of Stud, inch	⅜	7-16	½	9-16	⅝	¾	⅞
inches long	$3 50						
"	3 70	4 45					
"	3 80	4 50	5 00	5 60	6 50		
"	4 00	4 65	5 20	5 75	6 70		
"	4 15	4 80	5 40	5 90	6 90	10 00	
"	4 30	4 95	5 60	6 10	7 12	10 30	
"	4 45	5 10	5 80	6 30	7 30	10 60	
"			6 00	6 50	7 90	10 90	
"			6 20	6 70	8 08	11 20	14 00
"			6 40	6 90	8 30	11 50	14 50
"			6 80	7 10	8 46	11 80	15 00
"				7 30	8 66	12 10	15 50
"				7 50	8 84	12 40	16 00
"				7 70	9 04	12 70	16 50
"				7 90	9 20	13 00	17 00
"					9 40	13 30	17 50
"					9 60	13 60	18 00
"					9 80	13 90	18 50
"					10 00	14 20	19 00

SQUARE HEAD CAP SCREWS.

(Fig. 1480.)

Diameter of Head, inches	⅜	7-16	½	9-16	⅝	11-16	¾	⅞	1	1⅛
No. of threads to inch	18 20	18 20	16 14	14	12 13 14	12	10 11 12	10 11	9	8 9
Diameter of Screw, inch	¼	5-16	⅜	7-16	½	9-16	⅝	¾	7-8	1
¾ inches long	$2 20	2 50	2 90	3 40	4 00					
1 "	2 35	2 65	3 10	3 60	4 25	5 00				
1¼ "	2 50	2 80	3 30	3 80	4 50	5 25	7 00			
1½ "	2 65	2 95	3 50	4 00	4 75	5 50	7 50	9 50	12 76	16 56
1¾ "	2 80	3 10	3 70	4 20	5 00	5 75	8 00	10 00	13 97	17 40
2 "	2 95	3 25	3 90	4 40	5 25	6 00	8 50	10 50	14 08	18 24
2¼ "		3 40	4 10	4 60	5 50	6 25	9 00	11 00	14 74	19 08
2½ "			4 30	4 80	5 75	6 50	9 50	11 50	15 34	19 78
2¾ "				5 00	6 00	6 75	10 00	12 00	15 94	20 48
3 "					6 25	7 00	10 50	12 50	16 54	21 18

HEXAGON HEAD CAP SCREWS.

(Fig. 1481.)

Diameter of Head, inches	9-16	9-16	9-16	11-16	¾	13-16	⅞	1	1⅛	1¼
No. of threads to inch	18 20	18 20	16 14	14	12 13 14	12	10 11 12	10 11	9	8 9
Diameter of Screw, inch	¼	5-16	⅜	7-16	½	9-16	⅝	¾	⅞	1
¾ inch long	$2 64	3 08	3 57	4 12	4 84					
1 "	2 86	3 30	3 85	4 40	5 17	6 16				
1¼ "	3 08	3 52	4 12	4 67	5 50	6 50	8 25			
1½ "	3 30	3 74	4 40	4 95	5 83	6 82	8 80	12 00	16 92	21 06
1¾ "	3 52	3 96	4 67	5 22	6 16	7 15	9 35	12 50	17 64	22 00
2 "	3 79	4 18	4 95	5 50	6 50	7 48	9 90	13 00	18 36	22 94
2¼ "		4 40	5 22	5 77	6 82	7 80	10 45	13 50	19 08	23 88
2½ "			5 50	6 05	7 15	8 14	11 00	14 00	19 83	24 60
2¾ "				6 32	7 48	8 47	11 55	14 50	20 58	25 40
3 "					7 80	8 80	12 10	15 00	21 33	26 20

ROUND HEAD SET OR CAP SCREWS.

(Figs. 1482, 1483, and 1484.)

Diameter of Head, inch	3-16	9-32	11-32	15-32	19-32	23-32	13-16	⅞	15-16
Length " "	⅛	5-32	3-16	¼	5-16	7-16	½	9-16	⅝
No. of threads to "	36 40	24 26 28	18 20	18 20	16 14	14	12 13 14	12	10 11 12
Diameter of Screw, inch	⅛	3-16	¼	5-16	⅜	7-16	½	9-16	⅝
¼ inch long	$1 50	1 60							
½ "	1 62	1 75	1 90						
⅝ "	1 75	2 00	2 50	3 00					
¾ "	2 00	2 25	2 75	3 30	3 85	4 40	5 50		
1 "	2 25	2 50	3 00	3 57	4 12	4 67	5 83	7 25	
1¼ "	2 50	2 75	3 30	3 85	4 40	4 95	6 15	7 60	9 90
1½ "	2 75	3 00	3 57	4 12	4 67	5 22	6 50	7 90	10 45
1¾ "			3 85	4 40	4 95	5 50	6 82	8 25	11 00
2 "			4 12	4 67	5 22	5 77	7 15	8 60	11 55
2¼ "				4 95	5 50	6 05	7 48	8 90	12 10
2½ "					5 75	6 32	7 84	9 25	12 65
2¾ "						6 60	8 14	9 57	13 20
"							8 47	9 90	13 75

BOLTS.

TABLE SHOWING OUR STANDARD NUMBER OF V THREADS TO AN INCH.

Diameter, inch	¼	5-16	⅜	7-16	½	9-16	⅝	¾	⅞	1	1⅛	1¼	1⅜	1½	1⅝	1¾	1⅞	2
No. of Threads	20	18	16	14	12	12	11	10	9	8	7	7	6	6	5½	5	5	4½

MACHINE BOLTS.

With square heads and nuts, finished points.

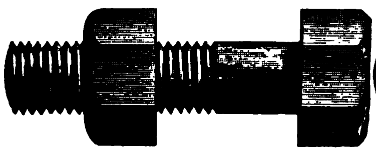


Fig. 1486.

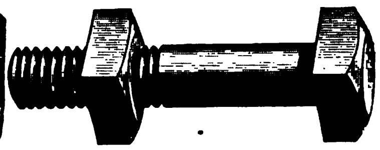


Fig. 1487.

PER 100.

Lgth., in.	¼	5-16	⅜	7-16	½	9-16	⅝	¾	⅞	1
1½....	$2 70	3 05	3 50	4 05	4 80	5 65	6 55	10 00	14 15	19 40
2......	2 80	3 20	3 70	4 30	5 10	6 00	7 00	10 60	15 00	20 50
2½....	2 90	3 35	3 90	4 55	5 40	6 35	7 45	11 20	15 85	21 60
3......	3 00	3 50	4 10	4 80	5 70	6 70	7 90	11 80	16 70	22 70
3½....	3 10	3 65	4 30	5 05	6 00	7 05	8 35	12 40	17 55	23 80
4......	3 20	3 80	4 50	5 30	6 30	7 40	8 80	13 00	18 40	24 90
4½....	3 30	3 95	4 70	5 55	6 60	7 75	9 25	13 60	19 25	26 00
5......	3 40	4 10	4 90	5 80	6 90	8 10	9 70	14 20	20 10	27 10
5½....	3 50	4 25	5 10	6 05	7 20	8 45	10 15	14 80	20 95	28 20
6......	3 60	4 40	5 30	6 30	7 50	8 80	10 60	15 40	21 80	29 30
6½....	3 70	4 55	5 50	6 55	7 80	9 15	11 05	16 00	22 65	30 40
7......	3 80	4 70	5 70	6 80	8 10	9 50	11 50	16 60	23 50	31 50
7½....	3 90	4 85	5 90	7 05	8 40	9 85	11 95	17 20	24 35	32 60
8......	4 00	5 00	6 10	7 30	8 70	10 20	12 40	17 80	25 20	33 70

PER POUND.

	⅜	7-16	½	9-16	⅝	¾	⅞	1
8¼ to 10 inch......	$0 18	16	14	13	12	11	10¾	10½
10¼ to 12 "	17	15	13½	12½	11½	10¾	10½	10¼
Over 12 "	16	14	13	12	11	10½	10¼	10

Bolts with Hexagon Heads or Hexagon Nuts............10 per cent extra
If both " " and " " ....20 " "

Bolts of irregular shape or style, made to order, will be charged extra at our discretion.

BOLT ENDS.

With square nuts.

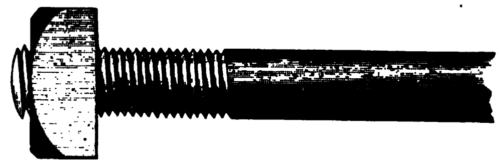


Fig. 1488.

Size of Iron, in.	½	⅝	¾	⅞	1	1⅛	1¼	1⅜	1½	1⅝	1¾	1⅞	2
Length, inch..	8	9	10	11	12	13	14	15	16	17	18	19	20
Per lb........	$0 14	12	11	10½		11		12		13		14	

ELEVATOR BOLTS.

PER 100.

For bolting buckets to grain elevators.

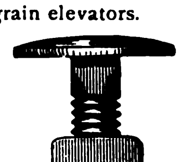


Fig. 1489.

3-16 inch Malleable Iron.		3-16 and ¼ inch Wrought Iron.		5-16 inch Wrought Iron.	
¾ inch........	$1 50	¾ inch........	$2 20	1 inch.........	$3 00
1 "	1 50	1 "	2 20	1¼ "	3 00

RAILROAD TRACK BOLTS.

Fig. 1490.

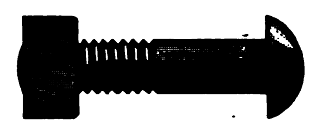


Fig. 1491.

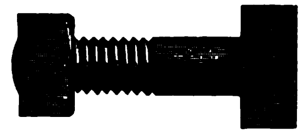


Fig. 1492.

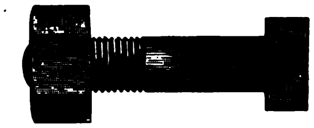


Fig. 1493.

Prices named for these on application, stating sizes and approximate quantity wanted.

PLOW BOLTS.

With forged Nuts.

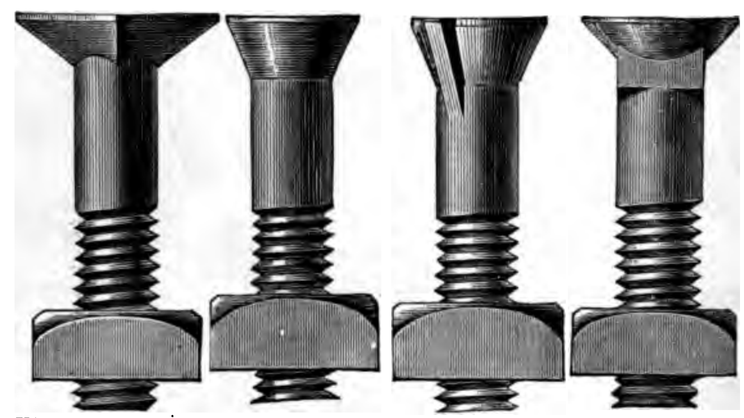


Fig. 1494.—Square Countersunk Head. Fig. 1495.—Round Head. Fig. 1496.—Key Head. Fig. 1497.—Round Head, Square Shank.

In ordering Plow Bolts, please state what style heads are desired, and whether right or left hand threads.

PER 100.

Length.	5-16	⅜	7-16	½	9-16	⅝
1¼ inch.......	$1 70	2 00	2 60	3 50	4 50	5 70
1½ "	1 80	2 10	2 75	3 70	4 75	6 00
1¾ "	1 90	2 20	2 90	3 90	5 00	6 30
2 "	2 00	2 30	3 05	4 10	5 25	6 60
2¼ "	2 10	2 40	3 20	4 30	5 50	6 90
2½ "	2 20	2 50	3 35	4 50	5 75	7 20
2¾ "	2 30	2 60	3 50	4 70	6 00	7 50
3 "	2 40	2 70	3 65	4 90	6 25	7 80
3¼ "	2 50	2 80	3 80	5 10	6 50	8 10
3½ "	2 60	2 90	3 95	5 30	6 75	8 40
3¾ "	2 70	3 00	4 10	5 50	7 00	8 70
4 "	2 80	3 10	4 25	5 70	7 25	9 00

IN BULK, PER POUND.

5-16 inch..................	$0 25	½ inch..................	$0 13
⅜ "	15	9-16 "	13
7-16 "	14	⅝ "	13

HANGER BOLTS.

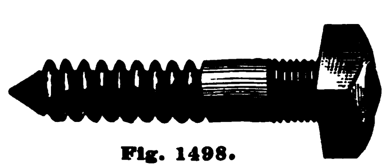


Fig. 1498.

Diameter	Length	
⅝ inch diameter,	5 to 7 inches long	Per lb., $0 14
¾ " "	6 to 8 " "	
⅞ " "	7 to 9 " "	
1 " "	8 to 12 " "	

PHILADELPHIA CARRIAGE BOLTS.

Warranted made from Norway Iron. With Forged Nuts, Turned Heads, and Finished Points.

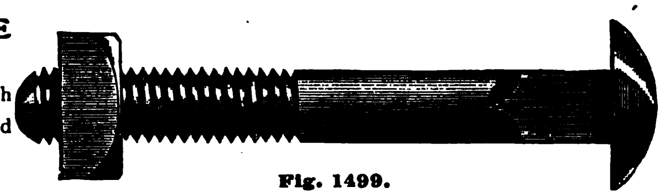


Fig. 1499.

PER 100.

Diam. in. / Length, in.	1/8, 3/16, & 1/4	5/16	3/8	7/16	1/2
1	$2 50	3 20	4 55	5 60	7 64
1¼	2 65	3 20	4 55	5 60	7 64
1½	2 80	3 20	4 55	5 60	7 64
1¾	2 95	3 35	4 55	5 60	7 64
2	3 10	3 50	4 55	5 60	7 64
2¼	3 24	3 64	4 74	5 77	7 85
2½	3 36	3 78	4 90	5 95	8 06
2¾	3 50	3 92	5 08	6 12	8 27
3	3 65	4 06	5 25	6 30	8 48
3¼	3 78	4 20	5 43	6 48	8 69
3½	3 92	4 34	5 60	6 65	8 90
3¾	4 06	4 48	5 78	6 83	9 11
4	4 20	4 62	5 98	7 00	9 34
4¼	4 34	4 76	6 14	7 18	9 55
4½	4 48	4 90	6 30	7 35	9 76
5	4 75	5 20	6 68	7 70	10 18
5½	5 02	5 48	7 00	8 05	10 60
6	5 30	5 75	7 35	8 40	11 02
6½		6 02	7 70	8 75	11 44
7		6 30	8 05	9 12	11 88
7½		6 58	8 40	9 45	12 30
8		6 86	8 75	9 80	12 72
8½			9 10	10 15	13 14
9			9 45	10 50	13 65
9½				10 85	14 00
10				11 20	14 42
10½				11 55	14 84
11				11 90	15 26
11½					15 68
12					16 12

Bevel and countersunk heads furnished only when ordered.

PHILADELPHIA PATTERN CARRIAGE BOLTS.

Extra Quality Refined Iron. With Forged Nuts, Turned Heads, and Finished Points. Please state if bevel or oval heads are wanted.

PER 100.

Diam., in. / Length, in.	1/4	5/16	3/8	7/16	1/2
1¼	$2 40	2 70	3 60	5 40	7 20
1½	2 40	2 70	3 60	5 40	7 20
1¾	2 45	2 80	3 70	5 40	7 20
2	2 50	2 90	3 70	5 40	7 20
2¼	2 55	3 00	3 82	5 55	7 40
2½	2 60	3 10	3 95	5 70	7 60
2¾	2 65	3 20	4 08	5 85	7 80
3	2 70	3 30	4 20	6 00	8 00
3¼	2 75	3 40	4 32	6 15	8 20
3½	2 80	3 50	4 45	6 30	8 40
3¾	2 85	3 60	4 58	6 45	8 60
4	2 90	3 70	4 70	6 60	8 80
4¼	2 95	3 80	4 83	6 75	9 00
4½	3 00	3 90	4 95	6 90	9 20
4¾	3 05	4 00	5 07	7 05	9 40
5	3 10	4 10	5 20	7 20	9 60
5½	3 20	4 30	5 45	7 50	10 00
6	3 30	4 50	5 70	7 80	10 40
6½	3 40	4 70	5 95	8 10	10 80
7	3 50	4 90	6 20	8 40	11 20
7½		5 10	6 45	8 70	11 60
8		5 30	6 70	9 00	12 00
8½		5 50	6 95	9 30	12 40
9		5 70	7 20	9 60	12 80
9½			7 45	9 90	13 20
10			7 70	10 20	13 60
10½			7 95	10 50	14 00
11			8 20	10 80	14 40
11½				11 10	14 80
12				11 40	15 20
12½					15 60
13					16 00
14					16 80

Fig. 1500.

COMMON TIRE BOLTS.

With Forged Nuts.

PER 100.

D., in. / Lgth., in.	3/16 & 1/4	5/16	3/8
1¼	$1 90	2 70	3 60
1½	1 90	2 70	3 60
1¾	1 95	2 85	3 70
2	2 00	2 90	3 70
2¼	2 05	3 00	3 82
2½	2 10	3 10	3 95
2¾	2 15	3 20	4 08
3	2 20	3 30	4 20
3¼	2 25	3 40	4 32
3½	2 30	3 50	4 45
4	2 40	3 70	4 70
4½	2 50	3 90	4 95
5	2 60	4 10	5 20

"UNION" AND PHILADELPHIA TIRE AND SLEIGH SHOE BOLTS.

With Forged Nuts—Warranted.

PER 100.

D., in. / Lgth., in.	1/8 & 3/16	1/4	5/16	3/8
1¼	$1 50	1 68	2 24	
1½	1 50	1 68	2 24	
1¾	1 50	1 68	2 32	
2	1 50	1 68	2 41	3 20
2¼	1 50	1 68	2 50	3 30
2½	1 50	1 68	2 58	3 40
2¾	1 50	1 75	2 66	3 50
3	1 50	1 82	2 74	3 60
3¼			2 82	3 70
3½			2 90	3 80
3¾			2 98	3 90
4			3 06	4 00
4½			3 22	
5			3 40	

STOVE AND SINK BOLTS.

With Forged Nuts.

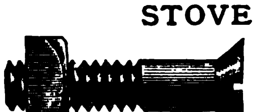


Fig. 1501.

FLAT HEAD.

PER 100.

D., in. / Lgth., in.	3/16	1/4	5/16	3/8
3/8	$0 60			
1/2	0 60	65		
5/8	0 60	65		
3/4	0 60	65	1 05	2 20
7/8	0 65	70	1 05	2 20
1	0 65	70	1 10	2 20
1¼	0 70	75	1 15	2 20
1½	0 75	80	1 20	2 20
1¾	0 80	85	1 25	2 20
2	0 85	90	1 30	2 20
2¼	0 90	95	1 35	2 30
2½	0 95	1 00	1 40	2 40
2¾	1 00	1 05	1 45	2 50
3	1 05	1 10	1 50	2 60

Fig. 1502.

ROUND HEAD.

PER 100.

D., in. / Lgth., in.	3/16 & 7/32	1/4
1/2	$0 85	95
5/8	0 85	95
3/4	0 85	95
7/8	0 90	1 00
1	0 90	1 00
1⅛	0 95	1 00
1¼	0 95	1 05
1⅜	1 00	1 05
1½	1 00	1 10
1¾	1 05	1 15
2	1 10	1 20

Sink Bolts with 2 Nuts.

Lgth.	1/4
1	$1 30
1¼	1 35
1½	1 40
1¾	1 45
2	1 50
2¼	1 55
2½	1 60
2¾	1 65
3	1 70

COMMON CARRIAGE BOLTS.

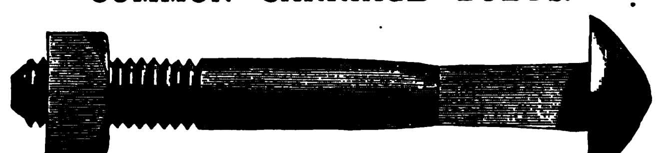


Fig. 1503.

STANDARD LIST OF THE ASSOCIATION OF BOLT AND NUT MANUFACTURERS OF THE UNITED STATES.

PER 100

Diam., in. / Length, in.	1/4	5/16	3/8	7/16	1/2	9/16 & 5/8
1	$2 40					
1¼	2 40					
1½	2 40	3 00				
1¾	2 45	3 10				
2	2 50	3 20	4 00	6 00	7 25	
2¼	2 55	3 30	4 15	6 20	7 50	
2½	2 60	3 40	4 30	6 40	7 75	
2¾	2 65	3 50	4 45	6 60	8 00	
3	2 70	3 60	4 60	6 80	8 25	15 00
3¼	2 75	3 70	4 75	7 00	8 50	15 40
3½	2 80	3 80	4 90	7 20	8 75	15 80
3¾	2 85	3 90	5 05	7 40	9 00	16 20
4	2 90	4 00	5 20	7 60	9 25	16 60
4¼	2 95	4 10	5 35	7 80	9 50	17 00
4½	3 00	4 20	5 50	8 00	9 75	17 40
4¾	3 05	4 30	5 65	8 20	10 00	17 80
5	3 10	4 40	5 80	8 40	10 25	18 20
5½	3 20	4 60	6 10	8 80	10 75	19 00
6	3 30	4 80	6 40	9 20	11 25	19 80
6½	3 40	5 00	6 70	9 60	11 75	20 60
7	3 50	5 20	7 00	10 00	12 25	21 40
7½		5 40	7 30	10 40	12 75	22 20
8		5 60	7 60	10 80	13 25	23 00
8½		5 80	7 90	11 20	13 75	23 80
9		6 00	8 20	11 60	14 25	24 60
9½		6 20	8 50	12 00	14 75	25 40
10		6 40	8 80	12 40	15 25	26 20
11			9 40	13 20	16 25	27 80
12			10 00	14 00	17 25	29 40
13				14 80	18 25	31 00
14				15 60	19 25	32 60
15					20 25	34 20
16					21 25	35 80

WOOD OR LAG SCREWS.

WITH SQUARE HEADS.

Fig. 1504.—COMMON POINT.

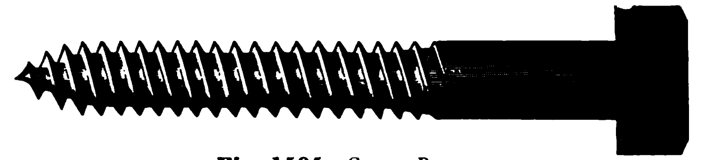


Fig. 1505.—GIMLET POINT.

PER 100.

D., in. / Lgth., in.	¼	5-16	⅜	7-16	½	9-16	⅝	¾	⅞	1
1½	$2 30	2 70	3 10	3 50	4 10	4 80				
2	2 40	2 80	3 25	3 70	4 35	5 10	6 00			
2½	2 50	2 90	3 40	3 90	4 60	5 40	6 40	9 50		
3	2 60	3 00	3 55	4 10	4 85	5 70	6 80	10 00	14 25	
3½	2 70	3 10	3 70	4 30	5 10	6 00	7 20	10 50	15 00	20 30
4	2 80	3 20	3 85	4 50	5 35	6 30	7 60	11 00	15 75	21 25
4½	2 90	3 30	4 00	4 70	5 60	6 60	8 00	11 50	16 50	22 20
5	3 00	3 40	4 15	4 90	5 85	6 90	8 40	12 00	17 25	23 15
5½	3 10	3 50	4 30	5 10	6 10	7 20	8 80	12 50	18 00	24 10
6	3 20	3 60	4 45	5 30	6 35	7 50	9 20	13 00	18 75	25 05

6¼ INCHES AND LONGER.—IN KEGS.

Diam., in.,	⅜	7-16	½	9-16	⅝	¾	⅞	1
Per lb.,	$0 22	20	18	17	16	15	14	14

PER 100.

Diameter, inch	5-16	⅜	7-16	½	9-16	⅝
1½ inches long	$2 00	2 00				
1¾ " "	2 10	2 25				
2 " "	2 25	2 50	2 75	3 25	4 00	5 25
2½ " "	2 50	2 75	3 00	3 50	4 25	5 50
3 " "	2 75	3 00	3 25	3 75	4 50	5 75
3½ " "	3 25	3 50	3 75	4 00	5 00	6 00
4 " "	3 50	3 75	4 00	4 50	5 50	6 50
4½ " "		4 00	4 25	5 00	6 00	7 00
5 " "		4 25	4 50	5 50	6 50	7 50

3 INCHES AND LONGER.—IN KEGS.

Diameter, inch	5-16	⅜	7-16	½	9-16	⅝	¾
Per lb	$0 34	24	19	16	15	14	13

Shorter than 3 inches, 2 cts. per pound advance.

TURNBUCKLES.

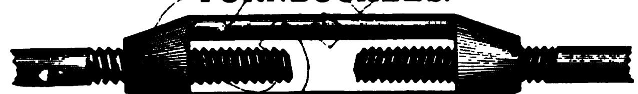


Fig. 1506.

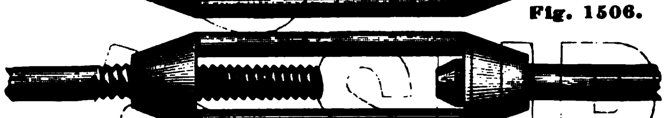


Fig. 1507.

Size iron	⅜	½	⅝	¾	⅞	1	1⅛	1¼	1½
Each	$0 75	1 00	1 25						
Per lb				20	18	17	17	16	16

SKEIN BOLTS.

Fig. 1508.

Prices named for these on application, stating sizes and approximate quantity wanted.

PATENT GIMLET SCREWS.

PER GROSS.

IRON SCREWS.

No.	¼ in.
0	$0 19
1	19
2	19

No.	⅜ in.
1	19
2	19
3	19
4	19
5	20
6	21
7	24
8	26

No.	½ in.
2	19
3	19
4	19
5	20
6	21
7	24
8	26
9	$0 29
10	31

No.	⅝ in.
2	20
3	20
4	21
5	22
6	24
7	26
8	29
9	31
10	33
11	35
12	37

No.	¾ in.
4	22
5	24
6	26
7	28
8	30
9	$0 32
10	34
11	36
12	38
13	44
14	48
15	56
16	64

No.	⅞ in.
5	26
6	27
7	29
8	31
9	33
10	35
11	38
12	41
13	46
14	50
15	58
16	65

No.	1 in.
5	$0 29
6	30
7	32
8	33
9	35
10	37
11	40
12	43
13	48
14	53
15	60
16	68
17	75
18	84
20	1 16

No.	1¼ in.
7	37
8	38
9	40
10	43
11	46
12	$0 50
13	55
14	61
15	70
16	80
17	86
18	91
20	1 17

No.	1½ in.
8	43
9	45
10	47
11	51
12	55
13	61
14	70
15	79
16	88
17	97
18	1 05
20	1 26

No.	1¾ in.
9	$0 52
10	54
11	57
12	63
13	70
14	79
15	88
16	97
17	1 06
18	1 17
20	1 34
22	1 55
24	1 85

No.	2 in.
10	57
11	62
12	71
13	79
14	88
15	97
16	1 06
17	$1 17
18	1 26
20	1 46
22	1 69
24	2 25

No.	2¼ in.
11	71
12	80
13	89
14	97
15	1 06
16	1 18
17	1 26
18	1 37
20	1 57
22	1 92
24	2 50

No.	2½ in.
12	89
13	97
14	$1 06
15	1 18
16	1 26
17	1 37
18	1 46
20	1 69
22	2 10
24	2 60

No.	2¾ in.
13	1 06
14	1 17
15	1 26
16	1 37
17	1 55
18	1 67
20	2 00
22	2 46
24	2 95

No.	3 in.
14	1 26
15	$1 37
16	1 55
17	1 73
18	1 92
20	2 28
22	2 50
24	3 40
26	3 80

No.	3½ in.
16	1 88
17	2 09
18	2 34
20	2 87
22	3 33
24	3 69
26	4 05

No.	4 in.
18	2 76
20	3 46
22	3 90
24	$4 30
26	4 80

No.	4½ in.
18	3 20
20	3 86
22	4 30
24	4 80
26	5 40

No.	5 in.
20	4 50
22	5 00
24	5 40
26	6 00

No.	6 in.
24	6 75
26	7 75
28	9 05
30	10 50

BRASS SCREWS.

No.	⅜ in.
1	$0 59
2	59
3	59
4	61
5	64
6	68
7	74

No.	½ in.
1	59
2	59
3	59
4	61
5	64
6	68
7	73
8	$0 79
9	86
10	95

No.	⅝ in.
2	60
3	60
4	62
5	65
6	69
7	74
8	80
9	87
10	96
11	1 06
12	1 20

No.	¾ in.
4	$0 64
5	67
6	71
7	76
8	82
9	90
10	99
11	1 09
12	1 20
13	1 35
14	1 55
15	1 80
16	2 10

No.	⅞ in.
6	73
7	$0 79
8	86
9	94
10	1 04
11	1 16
12	1 30
13	1 52
14	1 78
15	2 03
16	2 30

No.	1 in.
6	76
7	84
8	93
9	1 03
10	$1 15
11	1 29
12	1 45
13	1 63
14	1 83
15	2 05
16	2 35
18	2 75

No.	1¼ in.
7	90
8	97
9	1 15
10	1 35
11	1 55
12	1 75
13	$1 95
14	2 15
15	2 35
16	2 55
17	2 75
18	3 00
20	3 50

No.	1½ in.
8	1 25
9	1 39
10	1 54
11	1 72
12	1 92
13	2 15
14	2 42
15	$2 75
16	3 10
17	3 50
18	4 00
20	5 20

No.	1¾ in.
9	1 63
10	1 79
11	1 95
12	2 16
13	2 43
14	2 76
15	3 15
16	3 60
17	$4 11
18	4 68
20	5 40
22	6 40
24	7 50

No.	2 in.
10	2 00
11	2 18
12	2 38
13	2 77
14	3 16
15	3 55
16	3 94
17	4 33
18	$4 72
20	5 56
22	7 00
24	8 00

No.	2¼ in.
12	2 75
13	3 13
14	3 54
15	3 93
16	4 30
17	4 70
18	5 20
20	5 80
22	7 50

No.	2½ in.
14	$3 92
15	4 30
16	4 63
17	5 20
18	5 77
20	7 02
22	8 30
24	9 75

No.	3 in.
16	5 62
18	6 82
20	8 64
22	10 50
24	13 00
26	16 00

FLAT, ROUND, AND FILLISTER HEAD MACHINE SCREWS.

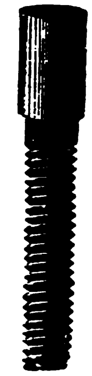
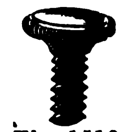



Fig. 1510.

Fig. 1511. Fig. 1512. Fig. 1513.

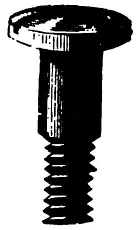


Fig. 1509. Fig. 1514. Fig. 1515. Fig. 1516. Fig. 1517.

IRON, PER GROSS.

No. of threads to inch	36	32	32	24	24	20	16	16	16
Nos.	4	6	8	10	12	14	16	18	20
Length.									
3/8 inch	$0 68	68	75	83					
1/2 "	68	68	75	83	0 90	1 13	1 35		
5/8 "			75	83	0 90	1 13	1 35	1 58	1 95
3/4 "			75	83	0 98	1 20	1 43	1 73	2 10
7/8 "				90	1 05	1 28	1 50	1 88	2 25
1 "				98	1 13	1 35	1 65	2 03	2 40
1 1/4 "					1 20	1 43	1 80	2 18	2 55
1 1/2 "						1 50	1 95	2 33	2 70

BRASS, PER GROSS.

No. of threads to inch	36	32	32	24	24	20	16	16	16
Nos.	4	6	8	10	12	14	16	18	20
Length.									
3/8 inch	$1 02	1 02	1 19	1 43					
1/2 "	1 02	1 02	1 19	1 43	1 80	2 33	3 15		
5/8 "			1 20	1 44	1 80	2 33	3 15	4 13	5 25
3/4 "			1 23	1 49	1 80	2 33	3 15	4 13	5 25
7/8 "				1 56	1 95	2 67	3 45	4 13	5 25
1 "				1 73	2 18	2 75	3 63	4 13	5 25
1 1/4 "					2 63	3 23	3 83	4 50	5 25
1 1/2 "						3 63	4 65	6 00	7 80

MALLEABLE IRON NUTS.

Fig. 1518.

THUMB NUTS.

Fig. 1519.

1/4 inch hole, 1/2 inch outside, 1 inch wing, 3/8 inch thick, ... $
5-16 " " 9-16 " " 1 5-16 " " 3/8 " " ....
3/8 " " 3/4 " " 2 " " 3/8 " " ....
7-16 " " 13-16 " " 2 " " 9-16 " " ....
5-16 " " 15-16 " " 1 5/8 " " 5-16 " " ....

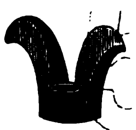


Fig. 1520.

WING NUTS.

Fig. 1521.

LOOP NUT.

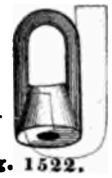


Fig. 1522.

1/4 inch hole, 9-16 inch outside, 1 1/4 inch wing, 5-16 inch thick, ... $
1/4 " " 9-16 " " 1 1/2 " " 5-16 " " ....
3/8 " " 5/8 " " 1 1/2 " " 3/8 " " ....
7-16 " " 7/8 " " 2 " " 5-16 " " ....
7-16 " " 1 " " 2 " " 9-16 " " ....

WASHERS.

Fig. 1523.

Diameter, in.	Size of Hole, in.	Thick. Wire Gauge, No.	Size of Bolt, in.	Per pound.
1/2	1/4	18	3-16	$0 28
5/8	5-16	16	1/4	24
3/4	5-16	16	1/4	21
7/8	3/8	16	5-16	18
1	7-16	14	3/8	16
1 1/4	1/2	14	7-16	13
1 3/8	9-16	12	1/2	13
1 1/2	5/8	12	9-16	13
1 3/4	11-16	10	5/8	12 1/2
2	13-16	10	3/4	12 1/2
2 1/4	15-16	9	7/8	12
2 1/2	1 1-16	9	1	12
2 3/4	1 1/4	9	1 1/8	12
3	1 3/8	9	1 1/4	12
3 1/2	1 1/2	9	1 3/8	12

Washers of irregular sizes, made to order, will be charged extra, at our discretion.

CAST IRON WASHERS.

5 cents per pound.

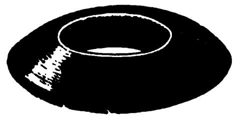


Fig. 1524.

NORWAY IRON RIVETS.

Made cold, from best selected brands of Norway Iron.

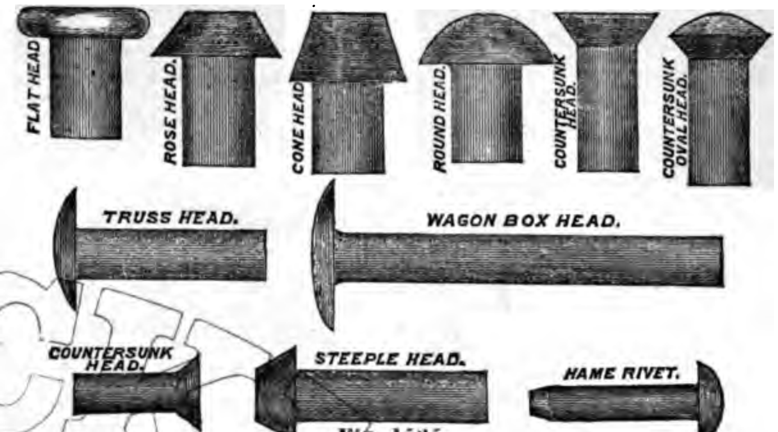


Fig. 1525.

IRON RIVETS.

IN BULK, PER POUND.

3/8 and 11-32 inch Wire.............. $0 11 1/2 No. 3, 1/4 inch, and No. 4 Wire....... $0 13
5-16 inch and Nos. 1 and 2 Wire .. 12 1/2 Nos. 5 and 6 Wire........................ 14

SMALLER THAN NO. 6 WIRE.

Size of Wire, No.	3-16	7	8	9	10	11	12	13	14
1/2 inch and longer	$0 14	15	16	18	19	20	21	25	27
3-32 "	25	25	25	30	35	40	50	60	60
1/8 "	24	24	24	29	33	40	50	60	60
5-32 "	23	23	23	27	31	36	45	50	60
3-16 "	22	22	22	25	29	33	39	45	58
7-32 "	20	20	21	23	27	30	35	40	56
1/4 "	19	19	19	21	24	28	30	35	54
9-32 "	18	18	19	21	24	27	30	35	52
5-16 "	18	18	19	21	23	26	29	33	50
11-32 "	17	17	18	21	22	25	27	31	45
3/8 "	17	17	17	20	21	24	24	29	40
13-32 "	16	17	17	20	20	23	24	29	37
7-16 "	16	17	17	19	19	22	24	29	34
15-32 "	15	16	16	19	19	21	23	27	30

Rivets made from wire smaller than No. 14, all lengths, 70 cents per pound.

Any of the above sizes, tinned, 6 cents per pound extra.

Rivets of any length, any size of wire to 1 inch, with any style of head, made to order with dispatch.

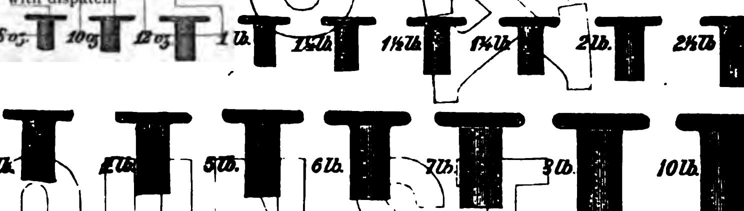


Fig. 1526.

COMMON SIZES.—PER 1000.

IRON—BLACK.

8 oz. .... $0 28 | 1 lb. .... $0 38 | 2 1/2 lb. .... $0 63 | 7 lb. $1 35
10 " .... 31 | 1 1/4 " .... 42 | 3 " .... 70 | 8 " 1 50
12 " .... 34 | 1 1/2 " .... 46 | 4 " .... 85 | 10 " 1 80
| 1 3/4 " .... 50 | 5 " .... 1 00 | 12 " 2 10
| 2 " .... 55 | 6 " .... 1 20 | 14 " 2 40

IRON—TINNED.

8 oz. .... $0 33 | 12 oz. .... $0 40 | 1 3/4 lb. .... $0 60 | 4 lb. $1 20
10 " .... 36 | 1 lb. .... 45 | 2 " .... 65 | 5 " 1 40
| 1 1/4 " .... 50 | 2 1/2 " .... 75 | 6 " 1 60
| 1 1/2 " .... 55 | 3 " .... 90 | 7 " 1 80

Oval or countersunk heads, or extra lengths, 5 cents per 1000 extra.

IN BULK, PER POUND.

Size	8	10	12 oz.	1	1 1/4	1 1/2	1 3/4	2	2 1/2 lb.
Black	$0 38	34	31	26	23	21	20	19	18
Tinned	45	39 1/2	36 1/2	31	27 1/2	25 1/2	23 3/4	22 1/2	21

Size	3	4	5	6	7	8	9	10	12	14 lb.
Black	$0 16 1/2	15	14	14	13 1/2	13 1/2	13	13	12 1/2	12
Tinned	21	21	19 1/2	18 1/2	16					

Coopers' 1d and 2d..$0 13 1/2 Coopers' 3d and 4d..$0 12 1/2 Coopers' 5d and 6d..$0 11 1/2

All rivets, tinned, not mentioned, 6 cents per pound extra.

COPPER AND BRASS RIVETS AND BURRS.

Nos.	7	8	9	10	11	12	13	14	15
Per pound	$0 49	50	52	54	56	58	60	65	70

Copper and brass rivets and burrs made to particular sizes and patterns, special price, not less than corresponding rates.

BOILER AND BRIDGE RIVETS.

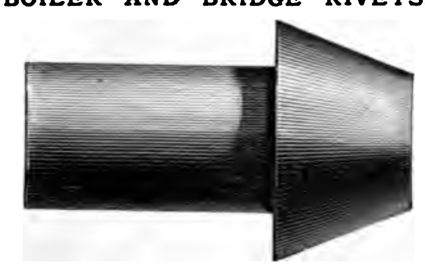


Fig. 1527.

Prices quoted on application.

NUTS.

SQUARE NUTS.

COLD PUNCHED AND HOT PRESSED.

Fig. 1528.

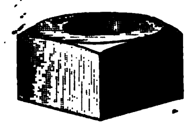


Fig. 1529.

Short Diam., in.	Thickness, in.	Hole, in.	Size of Bolt, in.	Per lb.
1/2	1/4	7-32	1/4	$0 20
5/8	5-16	9-32	5-16	17
3/4	3/8	11-32	3/8	15
7/8	7-16	13-32	7-16	13 1/2
7/8	1/2	7-16	1/2	13 1/2
1	1/2	7-16	1/2	12
1 1/8	1/2	1/2	9-16	12
1 1/8	5/8	9-16	5/8	12
1 1/4	5/8	9-16	5/8	11 1/2
1 3/8	3/4	21-32	3/4	11 1/2
1 1/2	3/4	21-32	3/4	11
1 5/8	7/8	25-32	7/8	11
1 3/4	7/8	25-32	7/8	11
1 3/4	1	7/8	1	11
2	1	7/8	1	11
2	1 1/8	15-16	1 1/8	11
2 1/4	1 1/8	15-16	1 1/8	11
2 1/4	1 1/4	1 1-16	1 1/4	12
2 1/2	1 1/4	1 1-16	1 1/4	12
2 3/4	1 3/8	1 3-16	1 3/8	12
3	1 1/2	1 5-16	1 1/2	13
3 1/4	1 5/8	1 7-16	1 5/8	13
3 1/2	1 3/4	1 9-16	1 3/4	14
3 3/4	1 7/8	1 11-16	1 7/8	14
4	2	1 13-16	2	14

Sizes not enumerated on above list will be charged extra, at discretion of the manufacturer.

HEXAGON NUTS.

COLD PUNCHED AND HOT PRESSED.

Fig. 1530.

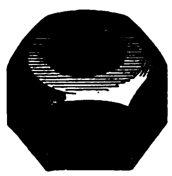


Fig. 1531.

Short Diam., in.	Thickness, in.	Hole, in.	Size ot Bolt, in.	Per lb.
1/2	1/4	7-32	1/4	$0 30
5/8	5-16	9-32	5-16	25
3/4	3/8	11-32	3/8	20
7/8	7-16	13-32	7-16	18
7/8	1/2	7-16	1/2	18
1	1/2	7-16	1/2	16
1 1/8	5/8	9-16	5/8	16
1 1/4	5/8	9-16	5/8	14 1/2
1 1/4	3/4	9-16	5/8	14 1/2
1 3/8	3/4	21-32	3/4	14 1/2
1 1/2	7/8	21-32	3/4	14
1 5/8	7/8	25-32	7/8	14
1 5/8	1	25-32	7/8	14
1 3/4	1	7/8	1	14
1 3/4	1 1/8	7/8	1	14
2	1 1/4	15-16	1 1/8	14
2 1/4	1 3/8	1 1-16	1 1/4	15
2 1/2	1 1/2	1 3-16	1 3/8	15
2 3/4	1 5/8	1 5-16	1 1/2	15
3	1 3/4	1 7-16	1 5/8	16
3 1/4	1 7/8	1 9-16	1 3/4	16
3 1/2	2	1 11-16	1 7/8	17
3 1/2	2	1 13-16	2	17

Sizes not enumerated on above list will be charged extra, at discretion of the manufacturer.

In ordering nuts, please say whether square or hexagon are wanted, and give the diameter, thickness, and size of hole required.

HOT PRESSED SQUARE and HEXAGON NUTS.

LIGHT OR "P" SIZES. 200 LB. BOXES.

Short Diam., inch.	Thickness, inch.	Hole, inch.	Size of Bolt, inch.	Per lb. Square.	Per lb. Hexagon.
5/8	3/8	21-64	3/8	$0 17	$0 25
3/4	7-16	3/8	7-16	15	20
7/8	1/2	7-16	1/2	13 1/2	18
1	9-16	1/2	9-16	12	16
1 1/8	5/8	9-16	5/8	12	16
1 1/4	3/4	21-32	3/4	12	16
1 1/2	7/8	49-64	7/8	11	14
1 3/4	1	7/8	1	11	14
2	1 1/8	1	1 1/8	11	14

FRANKLIN INSTITUTE SIZES (Adopted by the U. S. Government).

Short Diam., in.	Thickness, inch.	Hole, inch.		Size of Bolt, inch.	Per lb. Square.	Per lb. Hexagon.
1/2	1/4	.185= 3/16	nearly.	1/4	$0 20	$0.30
19-32	5-16	.240= 1/4	"	5-16	18	25
11-16	3/8	.294= 9/32	"	3/8	18	25
25-32	7-16	.344= 11/32	"	7-16	16	22
7/8	1/2	.400= 13/32	"	1/2	14	19
31-32	9-16	.454= 29/64	"	9-16	13	18
1 1-16	5/8	.507= 33/64	"	5/8	13	18
1 1/4	3/4	.620= 5/8	"	3/4	12	16
1 7-16	7/8	.731= 47/64	"	7/8	12	16
1 5/8	1	.837= 27/32	"	1	11 1/2	15
1 13-16	1 1/8	.940= 15/16	"	1 1/8	11 1/2	15
2	1 1/4	1.065=1 1/16.	"	1 1/4	12 1/2	15 1/2
2 3-16	1 3/8	1.160=1 5/32	"	1 3/8	12 1/2	15 1/2
2 3/8	1 1/2	1.284=1 9/32	"	1 1/2	13 1/2	16 1/2
2 9-16	1 5/8	1.389=1 13/32	"	1 5/8	13 1/2	16 1/2
2 3/4	1 3/4	1.491=1 1/2	"	1 3/4	15	18
2 15-16	1 7/8	1.616=1 5/8	"	1 7/8	15	18
3 1/8	2	1.712=1 23/32	"	2	15	18

FINISHED NUTS.

COLD PUNCHED, CHAMFERED AND TRIMMED, U. S. GOVERNMENT STANDARD SIZES.

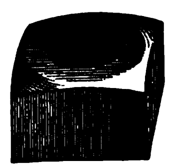


Fig. 1532.

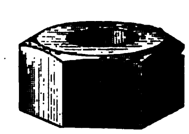


Fig. 1533.

Short Diam., inch.	Thickness, inch.	Hole, inch.	Size of Bolt, inch.	Per lb. Square.	Per lb. Hexagon.
1/2	1/4	.185= 3/16	1/4	$0 25	$0 35
19-32	5-16	.24 = 1/4	5-16	20	30
11-16	3/8	.294= 9/32	3/8	19	28
25-32	7-16	.344= 11/32	7-16	18	24
7/8	1/2	.4 = 13/32	1/2	15	19
31-32	9-16	.454= 29/64	9-16	13	18
1 1-16	5/8	.507= 33/64	5/8	13	18
1 1/4	3/4	.62 = 5/8	3/4	12 1/2	16
1 7-16	7/8	.731= 47/64	7/8	12 1/2	16
1 5/8	1	.837= 27/32	1	12	15
1 13-16	1 1/8	.94 = 15/16	1 1/8	12	15
2	1 1/4	1.005=1 1/16	1 1/4	12 1/2	15 1/2
2 3-16	1 3/8	1.16 =1 5/32	1 3/8	13 1/2	15 1/2
2 3/8	1 1/2	1.284=1 9/32	1 1/2	13 1/2	16 1/2
2 9-16	1 5/8	1.389=1 13/32	1 5/8	13 1/2	16 1/2
2 3/4	1 3/4	1.491=1 1/2	1 3/4	15	18
2 15-16	1 7/8	1.616=1 5/8	1 7/8	15	18

Sizes not enumerated on above list will be charged extra, at discretion of the manufacturer.

BELL CORD FITTINGS.

BELL CORD THIMBLES.

Fig. 1534.

Fig. 1535.

PER DOZEN.

Iron, japanned	$0 65	Iron, japanned	$2 50
" bronzed	1 25	" bronzed	3 50
Brass, elegantly engraved	2 75	Brass	4 50
" plain, polished	2 75	Silver plated	5 50
" plated	3 50		

BELL CORD PULLEYS.

Fig. 1536.

Fig. 1537.

Fig. 1538.

SIDE PULLEY.

Fig. 1539.

PER DOZEN.

	Plain.		Plain.				Screwed.
Fig.	1536	1536	1537	1537	1538	1539	1539
Iron, japanned	$3 00	1 00	3 00	90	3 00	3 00	3 00
" bronzed	4 00	1 60	4 00	1 50	4 00	4 00	4 00
Brass	4 75	3 75	4 75	3 75	4 75	4 75	4 75
Plated	6 50	4 75	6 50	4 75	6 50	6 50	6 50

Fig. 1538 is same size as Fig. 1537, with the base lengthwise.

BELL CORD COUPLINGS.

Fig. 1540.

Fig. 1541.

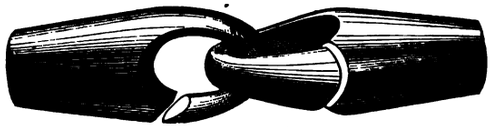


Fig. 1542.

Fig. 1543.

PER GROSS.

Fig. 1540, iron, japanned	$6 00
" 1541, " " with rope knotted	7 00
" 1542, brass, with rope knotted	18 00
" 1543, " the end to screw in	18 00
" 1542, plated	24 00
" 1543, "	24 00

BASKET RACKS.

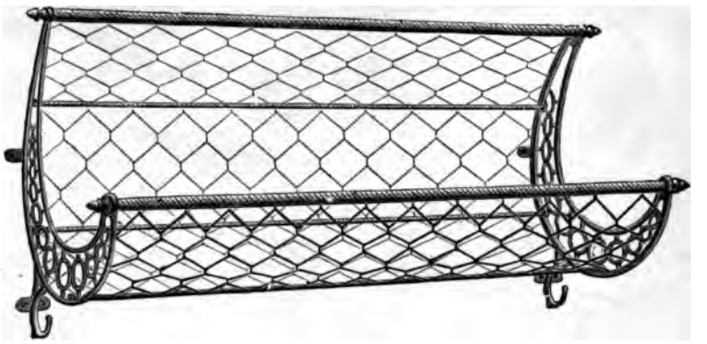


Fig. 1544.

	Each
Twenty-four inches long, brass brackets, plain rods	$3 75
Longer, per inch extra	10
Shorter, " discount	05
Patent rack, with brass wire netting and tubular rods	6 50
Longer, per inch extra	25
Shorter, " discount	10
Patent, silver plated	9 50
Longer, per inch extra	30
Shorter, " discount	12
With malleable iron brackets, no tubing	3 00
Longer, per inch extra	10
Shorter, " discount	05
Malleable iron bracket, gold or copper bronzed, with tubing, and acorns on front rods	3 75
Longer, per inch extra	15
Shorter, " discount	08
Brass brackets, with iron wire netting, tubing, and acorns, plated	5 50
Longer, per inch extra	15
Shorter, " discount	08
Brass brackets, with iron wire netting, tubing, and acorns, plated	7 50
Longer, per inch extra	20
Shorter, " discount	10

STRAP GUIDES.

Fig. 1546, brass trimmings, each $3 25
" 1546, plated " " 3 75
Fig. 1545, brass single strap guide, each, $1 75
" 1545, plated " " " " 2 25

In ordering, give the length from the ceiling to the top of the roller.

SINGLE.

Fig. 1545.

DOUBLE.

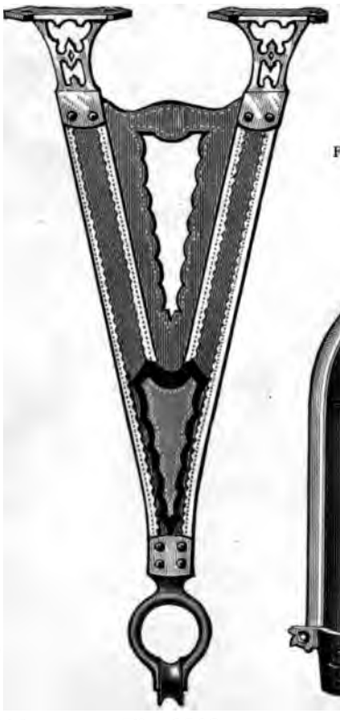


Fig. 1546.

ALCOVE.

Fig. 1547, plated, each $15 00

Fig. 1547.

EUREKA SASH LOCK.

Fig. 1548.

Iron, polished and japanned, per dozen	$1 75
" " gold or copper bronzed, per dozen	2 25
" " nickel plated, per dozen	3 25
Brass, " and lacquered, "	4 25
" " silver-plated, "	5 00
Bronze metal, polished, "	7 50
Brass angle stops, extra, "	40

EUREKA SASH LIFT.

Fig. 1549.

Iron, electro-copper, to imitate bronze metal, per doz.	$1 00
" polished, gold or copper bronzed, per doz.	90
" " and nickel-plated, per doz.	1 25
Brass " and lacquered "	1 75
" " and silver plated "	2 50
Bronze metal, polished "	2 50

The lip turns down so as to keep the finger from slipping off. It is extra heavy.

WINDOW LIFT.

Fig. 1550.

Brass, projecting from sash ¾ inch, per doz	$0 75
Silver plated and burnished, per doz.	1 25
Small, projecting from sash 11-16 inch, per doz.	60
Silver plated and burnished, per doz.	1 25
Very small size, for small sashes in compartment, per doz.,	75
Silver plated and burnished, per doz.	1 50

WINDOW OR BLIND LIFT.

Fig. 1551.

Brass, engraved, projecting from sash 11-16 in., per doz.,	$1 00
Polished and lacquered, per doz.	1 25
Silver plated and burnished, per doz.	2 00
Smaller size, engraved, projecting from sash 9-16 inch, per doz.	75
Small size, plain, lacquered	75
" " plated	1 50

BLIND LIFTS.

Fig. 1552.

Brass, upper, per doz.	$1 00
" lower, "	1 25
Plated, upper, "	1 25
" lower, "	1 50

BLIND BOLTS.

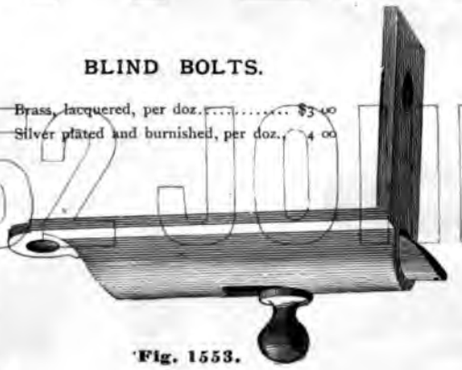


Fig. 1553.

Brass, lacquered, per doz.	$3 00
Silver plated and burnished, per doz.,	4 00

NEW PATTERN SASH LOCK.

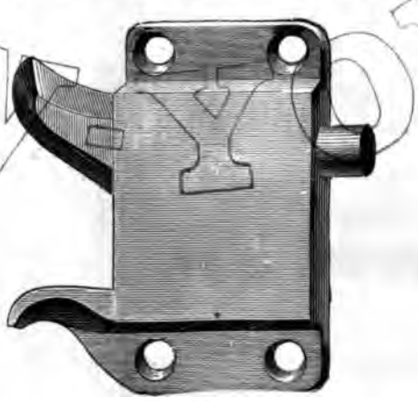


Fig. 1554.

Brass, per doz.	$3 75
Silver or nickel plated, per doz.	5 00

CAB FASTENINGS AND CATCHES.

Fig. 1555.

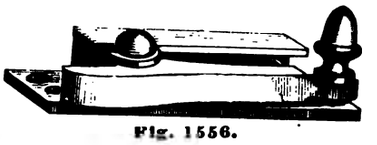


Fig. 1556.

Fig. 1557.

Locomotive cab fastenings, per doz.	$12 00
" " catches "	8 00

BLIND SPRINGS.

Fig. 1558.

Brass, 4½ inches long, ¾ inch wide, per doz.	$0 63
" 4½ " " ½ " " "	63
Steel, 4½ " " ¾ " " "	63
" 4½ " ⅝ " " "	63

HOPPERS.

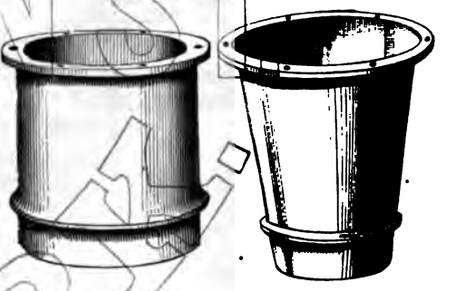


Fig. 1559. Fig. 1560.

Large hopper, imported, each	$6 00
Regular hopper, each	5 00
Extra high hopper, each	5 75

URINALS.

Fig. 1561.

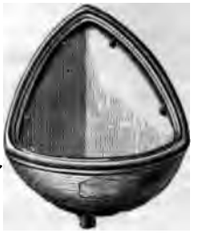


Fig. 1562.

Urinal, regular, each	$3 75
Extra high back, imported, each	5 00

QUICKIE SUPPLIES 52 JOHN ST NEW YORK

CONDUCTORS' CANCELING PUNCHES.

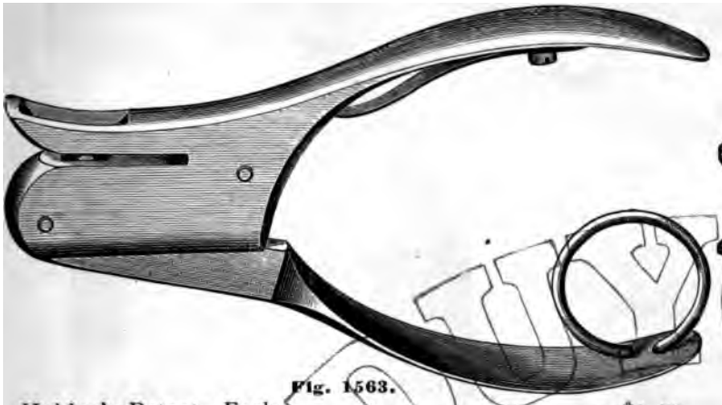


Fig. 1563.

Holden's Patent—Each $3 50

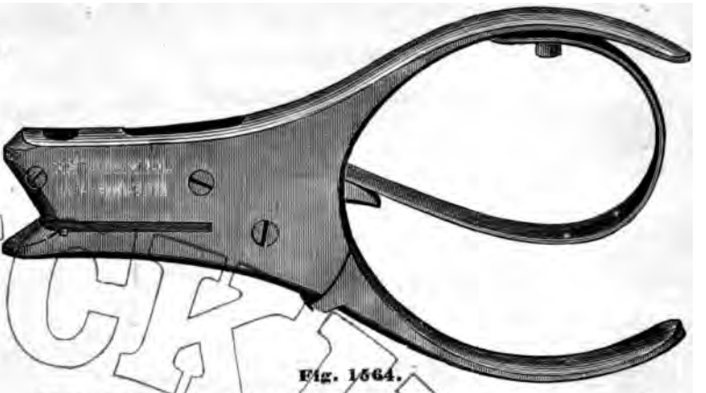


Fig. 1564.

Miller's Patent—Each $3 00

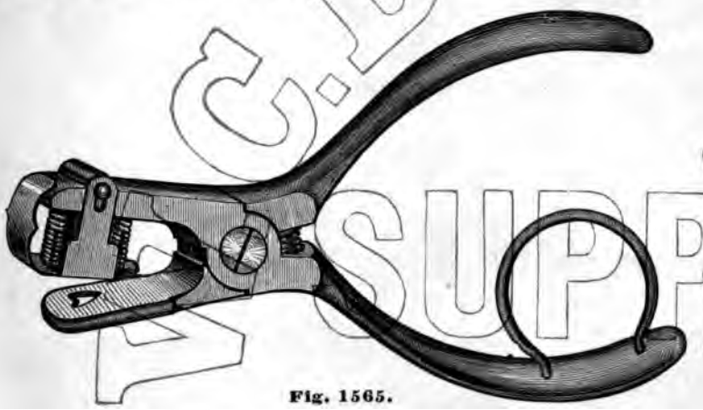


Fig. 1565.

Hill's Patent—Each $3 00

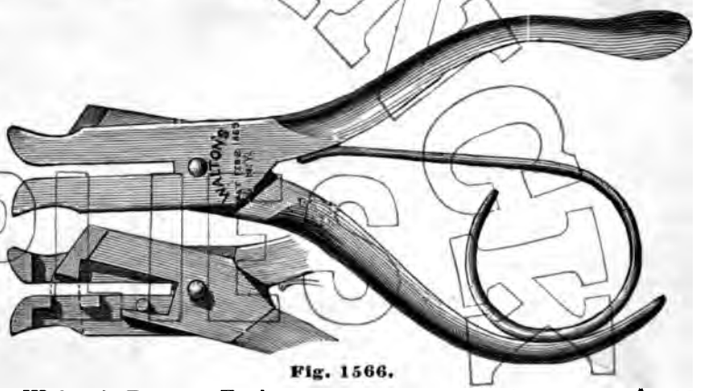


Fig. 1566.

Walton's Patent—Each $3 00

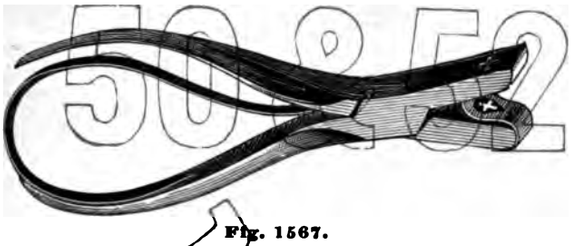


Fig. 1567.

Fancy Holes, per doz. $13 50
Round " " 12 50

Patent Rubber Seat—Each $3 50

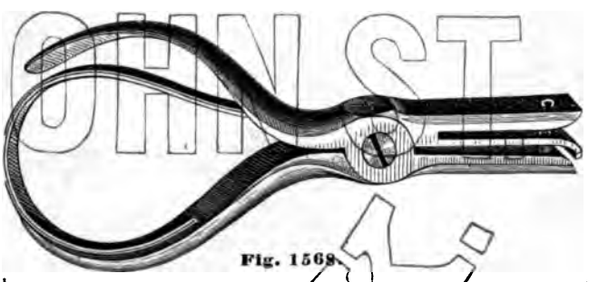


Fig. 1568.

Each $2 50

Crocker's Patent—Each 5 00

BAGGAGE CHECKS.

Fig. 1569.

Fig. 1570.

Fig. 1571.

Fig. 1572.

Fig. 1573.

Reversible, per 100 ..... $12 00
Local, per 100 ..... $10 00
Check Straps, per 100 ..... $3 00

C. DUCKHAM & SUPPLY CO. 50 & 52 JOHN ST NEW YORK

PATENT IMPROVED METALLIC SEALS, WIRES, AND PRESSES.

FOR SEALING EXPRESS AND FREIGHT CARS, ETC.

Fig. 1574.

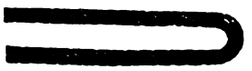


Fig. 1575.

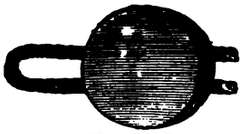


Fig. 1576.

In Quantities of 5000. Per 1000.

Leads and Wires, 7 inch	$10 00	Twisted Wires, without the Seals	$3 00
" " 10 "	10 50	" " " "	4 00
" " 12 "	11 00	" " " "	5 00
Large Leads and Wires	15 00		

Fig. 1577.

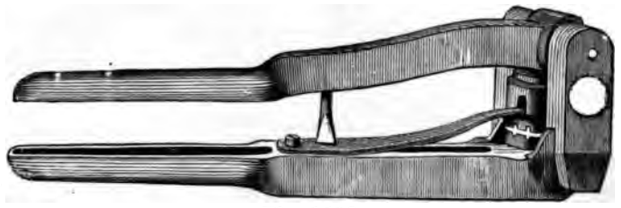


Fig. 1578.

Large Presses	$15 00
Presses with Engraved Dies, to order, complete, each	20 00
" " " " extra large, to order, complete, each	15 00

WATER COOLERS.

(Fig. 1579.)

Gallons	1½	2	2½	3	4	5	6	7	8	10	12	16
Each	$2 00	2 40	2 70	3 00	3 50	3 80	4 50	5 50	7 25	10 00	12 00	16 00

All finished by machinery in the very best manner, and fitted with first quality Brass Faucet.

Plated Telegraph Cocks, each $2 50

ICE TONGS.

Per Pair $1 50 to 3 00

ICE AXES.

Each $2 50

Fig. 1579.

BRASS PATENT RACK TUMBLER SPRING PAD LOCKS.

FOR FREIGHT CARS AND SWITCHES.

	Without Keys, per doz.	Keys, per doz.
2½ inch, Tumbler, Loose Drop and Chain for Railroad Cars and Switches	$12 25	1 25
2½ inch, Tumbler, Spring Drop and Chain for Railroad Cars and Switches	12 75	1 25
2½ inch, Tumbler, Heavy, Spring Drop and Chain for Railroad Cars and Switches	13 75	1 25
2½ inch, Waterproof, Tumbler, Heavy, Spring Drop and Chain for Railroad Cars and Switches	14 75	1 25
2¾ inch, Tumbler, Heavy, Spring Drop and Chain	16 50	1 50
2¾ " 3 " " " " " "	18 50	1 50
3 inch, Tumbler, Heavy, Spring Drop and Chain	$18 25	1 75
3 " 3 " " " " " "	22 00	2 00
Also,		
An Improved Stationary Freight Car Lock, Iron	22 00	2 00
" " " " " Brass	24 00	2 00

Stationary Freight Car, Passenger Car, and Switch Locks made to order, to suit any key furnished, and guaranteed to fit.

Special Locks made for any Railroad Company, of any weight, size, or peculiarity, and kept for their exclusive use.

Fig. 1580.

EUREKA COMBINATION WRENCH.

Size, inch	6	12	15
Per dozen	$15 00	30 00	40 50

Fig. 1581.

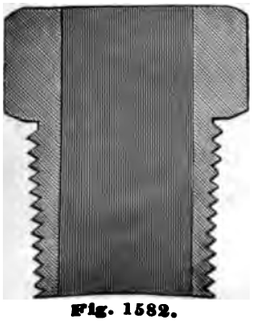


Fig. 1582.

To meet the wants of many of our customers, we are now manufacturing and keep in stock

FUSIBLE PLUGS FOR BOILERS.

Our standard alloy melts at 392 degrees Fahrenheit, which is equal to about 200 lbs. pressure, but can furnish alloys to melt at any special number of degrees required.

All are cut for ¼ inch pipe thread.

Per dozen $12 00

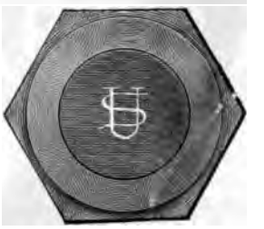


Fig. 1583.